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NATIONAL ESTUARINE POLLUTION STUDY. PROCEEDINGS OF THE PUBLIC MEETING HELD AT NEW YORK, NEW YORK ON JULY 23, 1968, AND WRITTEN STATEMENTS CONCERNING TIDAL WATERS OF NEW YORK AND NEW JERSEY (EXCEPT FOR THE DELAWARE RIVER ESTUARY)

Federal Water Pollution Control Administration
Boston, Massachusetts
1968

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NATIONAL ESTUARINE POLLUTION STUDY

Proceedings of the
Public Meeting held at
New York, New York
July 23, 1968

and

Written Statements Concerning
Tidal Waters of New York and New Jersey
(Except For the Delaware River Estuary)

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(Public meeting held on Tuesday, July 23, 1968, at 9:30 a.m., at Rockefeller University, Caspary Auditorium, York Avenue and 66th Street, New York City, for the United States Department of the Interior, Federal Water Pollution Control Administration, Northeast Region, North Atlantic Water Quality Management Center, Edison, New Jersey 08817.

Mr. Lester M. Klashman presided.)

oOo

CHAIRMAN KLASHMAN: Shall we come to order, please?

Good morning, ladies and gentlemen, and welcome to our meeting.

My name is Lester M. Klashman, and I am the Regional Director for the Northeast Region of the Federal Water Pollution Control Administration.

We are all here because we feel our coastal and estuarine waters are among our most precious resources. The purpose of this public meeting is to have your views on the tidal waters of New York and New Jersey. If, for any reason, anyone wants to speak about an area other than this, we certainly would be delighted to receive your statements.

What do you think are the values of an estuary -- esthetic, recreational, dollar?

Have estuaries been damaged by pollution? Where? How Much?

What should the future of the coastal zone be?

What are the best uses?

What system of management will best provide for the development of our coastal resources?

This public meeting is the second of five in the Northeast Region. Others will be held at Hartford on August 19, Portland on September 10 and Boston on October 8. These meetings are being held in accordance with the

Clean Water Restoration Act of 1966. The Federal Water Pollution Control Administration is charged by the Congress of the United States to prepare a comprehensive report of the status of water pollution in the nation's coastal waters. The report will identify the actions needed to assure wide use of the total resources of our coastal zones, so that not only will degradation of our valuable coastal waters be avoided, but also the quality of our waters may be enhanced.

This effort is known as the National Estuarine Pollution Study. The report is scheduled for completion and submission to the Congress on November 1, 1969. It will provide the Congress with the information it needs to draft legislation bearing on prevention and abatement of pollution in the nation's coastal waters.

Because they feel our estuarine and coastal waters are so important, the States of New York and New Jersey and the Interstate Sanitation Commission have joined the Federal Water Pollution Control Administration in co-sponsoring this meeting.

The Governor of each of the states has designated a liaison man for this National Estuarine Pollution Study. For New Jersey we have Dr. Roscoe Kandle, Health Commissioner, here represented by Mr. Robert Shaw, on my right.

For New York we have Dr. Hollis Ingraham, Health Commissioner, here represented by Mr. John Haberer, on my left.

These men are channeling information from the various agencies in their states directly to the FWPCA's Office of Estuarine Studies, whose Acting Chief is Captain Louis DeCamp, who has just joined our staff from the Navy Oceanographic Operation Office. This is also true for other federal agencies and for the Interstate Sanitation Commission, which is represented by Mr. Thomas Glenn, who is at my extreme right.

We sent over 750 invitations to all organizations which we thought had an interest. However, be assured that this is a public meeting and statements from all are welcome.

Those of you wishing to speak should have so indicated on the registration card you made out when you entered. You will be asked to come to the rostrum in turn. The panel members may wish to ask clarifying questions but we are not prepared to entertain questions from the floor.

Our purpose is to collect information, and not to provide a forum for debate. If you decide to make a statement and have not yet so indicated on your registration card, please inform the Secretary at the registration table upstairs, so we can schedule you.

Those of you wishing to submit written statements either now or in the next few weeks are welcome to do so. The Secretary will take them or tell you where to mail them. We have already received written statements, or promises of statements, from:

1) Westchester County Soil and Water Conservation District;
2) Town of Riverhead, New York;
3) Federation of Conservationists, United Societies;
4) The Association of Interpretive Naturalists, Inc.;
5) The Long Beach Island Conservation Society;
6) The Yacht Safety Bureau;
7) Hydro-Science, Inc.

We have a 35 millimeter projector and an overhead projector. Please inform the Secretary in advance if you wish to use these or your own projection equipment.

These proceedings are being taken by a reporter and will be published and sent to you. This is why we need your address on the registration cards. The written submissions will be included in the record. If you are planning to speak and have a written copy or outline, it would greatly aid the reporter if you let our Secretary make a Xerox copy of it in advance so that we can distribute copies both to him and the press, and for the panel.

We would like to try and keep the presentation down to about ten minutes, so that if your statement is going to run much over that, which is, as you know, perhaps five pages of double space, we would be very grateful if you could condense it and submit the entire paper for the record.

We thank you for your interest in these coastal waters which are among our most precious resources. Your thoughtful participation in this meeting will be helpful in providing for their protection and development.

Our first speaker -- I would like to call on Admiral E. C. Stephan, Chairman of the Regional Marine Resources Council of the Nassau-Suffolk Regional Planning Board.

ADM. STEPHAN: Thank you, Mr. Chairman.

My name is Edward C. Stephan. As Chairman of the Nassau-Suffolk Marine Resources Council, I am authorized to speak for the County Executives of Nassau and Suffolk Counties of Long Island, New York; for the Nassau-Suffolk Regional Planning Board as well as for the Marine Resources Council.

Nassau and Suffolk Counties geographically constitute 75% of Long Island and have a population of 2.4 million at present in one of the most rapidly growing areas in the world. This area has over 1,000 miles of coastline which on the north, or Long Island Sound shore, resembles the Connecticut, Rhode Island and Massachusetts shores, and on the south, or Atlantic Ocean shore, resembles the New Jersey, Delaware and Maryland shores.

I will now respond to the questions raised in the Guidelines provided for this meeting:

1) The estuarine marine environment of Long Island is the predominant factor in the entire cultural, political, economic and social being of Long Island. Esthetically, the controlling factor of Long Island living is marine environment. Personally, no one who lives or works on Long Island is ever more than ten miles from its estuarine marine environment. Recreationally, Long Island offers a wide range of swimming, boating, fishing and clamming, and offers other unique recreational opportunities. Economically, every aspect of Long Island is affected by its proximity to the marine environment. If this environment is healthy and attractive, values increase. If the environment deteriorates and becomes unhealthy and unattractive, values are decreased. The estimated annual dollar value of directly marine related industries on Long Island such as bathing, boating, commercial and sport fishing, and shell fishing, plus industries in marine instruments and equipment, is well over $250 million a year.

2) Pollution has cut and is cutting a wide swath of degradation and destruction affecting attractive features of Long Island. Eleven bathing beaches are now closed. More than 10,000 acres of bottom

are now forbidden to shell fishing. Over 25% of the valuable wetlands have been destroyed since 1950.

3) Our opinion as to the future of our coastal zones may be summed up as follows: We owe to those who follow us a coastal zone which is healthy and available for multiple use. We owe to ourselves the oceanic science and the ocean engineering capabilities to discharge this obligation to preserve freedom of action for our successors.

4) The best uses of our estuaries are those which are based on a clear understanding of physical, chemical, biological and geological effects on the marine environment of various actions which may, in turn, be translated into the effects on cultural, economic and social values.

The best management systems are those which will, at the earliest date, give to the decision makers -- the people, the planners and the officials -- adequate understanding of the consequences of various actions on the marine environment so that they can in actuality manage it in the public's interest. This knowledge is the surest safeguard that we can provide against foolish or selfish actions which would cause results that are inimical to local, state or national well-being.

Nassau and Suffolk Counties are taking positive steps, at their own expense, to protect their invaluable marine environment against still greater degradation and to achieve the knowledge requisite to effective management.

The Nassau-Suffolk Regional Planning Board instituted in 1965 an eight-man Oceanographic Committee which has now become a 26-man Marine

Resources Council. These bodies have studied the importance and value of Long Island marine resources and have recognized the extent to which current decisions are being made in an atmosphere of insufficient oceanographic knowledge. The report of the Oceanographic Committee The Status and Potential of the Marine Environment of Long Island which documents this will be made a part of the record of this meeting. The Council, with its membership consisting of representatives of all cognizant federal, state, county agencies and interested citizens, attempts to bring common sense judgment to decisions which must be made today and cannot wait until adequate knowledge becomes available.

The Council is now in the final stages of selection of a contractor for a research program which will narrow the oceanographic knowledge gap and make possible more enlightened decisions with respect to the marine environment of Long Island. The knowledge obtained in this research program will be invaluable not only on Long Island but any estuary in the country or around the world. The objective of this research program is to put into the hands of planners the information required to weigh alternative solutions to problems and determine which action on a pure engineering or on a cost-benefit basis is best.

Functionally, the research program consists of the following steps:

1) Examine current and foreseeable problems to predict type of decisions that will be required on Long Island.
2) To define the knowledge requirements to enlighten these decisions.
3) To research the current state of the art to determine the extent to which the knowledge required is available and

assign creditability factors to existing knowledge.

4) For knowledge unavailable or of insufficient creditability, determine data requirements to derive adequate knowledge.

5) Determine extent to which data required is available. And there is a great difference, of course between data and knowledge. Knowledge is derived from data; and while data is collected in this case from the ocean --

6) Plan and conduct data collection for data not presently on hand and translate data into required knowledge.

7) On basis of current and improving knowledge, design computerized system for calculating the effects of various actions on physical, chemical and biological aspects of marine environment. Once so derived, the knowledge must then be translated so that it can result in social, economic and cultural betterment.

Long Island has extraordinarily urgent estuarine marine environment problems. Long Island is taking strong and decisive steps to increase the understanding which it is able to bring to bear on these problems. Long Island is biting off more than it alone can chew. It will require and deserves outside support and assistance in an effort which will not only be important to Long Island but also will be important to the management of every other estuary in the country and in the world.

CHAIRMAN KLASHMAN: The panel would like to ask just a few questions.

MR. HABERER: Where does your financing come from?

ADM. STEPHAN: Our financing approach initially -- the existence of the Committee and of the Council has been financed by the Regional Planning

Board which, in turn, got its funds from the two counties. The many proposals which we have received to do this research program have been furnished without cost by the companies or institutions that were hopeful of getting the contract.

In the execution of this contract, or this research program, we would hope that it would be staged so that it would be separated financially as to its various costs so that we move forward. We would also be able to satisfy up to a point and have that point funded. When we have got a clearcut work statement, when this has been approved not only on Long Island but throughout the Oceanographic community as a sound approach to the problem, we would hope to finance the entire program through a combination of local, state and federal funds.

CHAIRMAN KLASHMAN: Thank you.

MR. GLENN: I notice you said 25% reduction of the wetlands. In your work, are you recommending no filling of wetlands for, say, making ports, or are you in favor of them technically remaining wetlands?

ADM. STEPHAN: I feel the big thing that we have been struck with in our work in Long Island is that when the emotional conflicts without the requisite knowledge result in various actions, there is some loss of wetlands when certain highways or bridges are built. We have tried to minimize these. We have tried to pull it back. We have tried to seek a reasonable exchange between the marine environment and other values. Our general hope, until we know more, is that we do everything we can to preserve the wetlands until we know enough to know how we can make a better compromise within the marine environment and other factors that are important to the growth of Long Island.

MR. GLENN: Do you think this should be done also in heavy urban areas as well as more remote recreational areas?

ADM. STEPHAN: Here again you have got to understand what you are actually giving up. Is it replaceable, and what are the conflicting values? I think it is a matter --and our whole feeling is that we don't have this knowledge, but that's within -- we are starting to get this knowledge.

CHAIRMAN KLASHMAN: Are there any more questions? After Mr. Posner I am going to call on Mr. Eisenbud.

MR. POSNER: Gentlemen on the panel, ladies and gentlemen in the audience, I didn't come with a prepared statement. It was only a couple of days ago that I realized that this conference was going to take up an estuary body; I didn't even know it was an estuary until I spoke to Mr. Farlow the other day and found out that Jamaica Bay, about half of which is located in my assembly district, was considered an estuary for the obvious reason that the tidal flow is from the Atlantic Ocean flushed in and out of Jamaica Bay, and the fresh water drains into Jamaica Bay and goes out into the ocean. I have been interested in the question that was asked by the gentleman on the panel, as to whether estuaries within large urban centers should receive this type of consideration and attention at this conference, and I think Jamaica Bay is a prime example.

For those of you who are not familiar with Jamaica Bay, it is right in this area (indicating) here; it is directly north of the Rockaway Peninsula which is the extreme southern tip of New York City, bordered by Kennedy Airport on the northeast and Kings County on the west, and Nassau County on the extreme east over here (indicating), and Queens County surrounds it by the Rockaway Peninsula, and directly north of it other sections of Queens County. Jamaica Bay is the largest estuary body of water within the city of New York, excluding the Hudson River, and I don't think any of us will attempt to come to a conclusion that the Hudson River offers the same type of water -- recreational, fishing, commercial and sports -- that Jamaica Bay did offer in the past and should offer as far as the future is concerned.

Through research that I have been doing in the past year, I have discovered that at one time, as recently as 35 to 40 years ago, Jamaica Bay was the major oyster and clam commercial fishing area -- not just amateur fishing area -- in the entire east coast. Millions and millions of dollars based upon our present value for oysters and clams were dug up and a large industry flourished there until water pollution began to set in from the surrounding areas. Today there is no significant oyster or clam industry in Jamaica Bay at all. I think the total amount being taken out of the Bay runs to less than a million dollars, and it has to be changed by removing the oysters over to fresh water areas in Jersey where they are bedded and the pollution removed from them.

Jamaica Bay also at one time was a prime recreational area both for swimming, boating and other resources. In a city as large as New York, to lose one of these outstanding national bodies of water -- and that's what's happening; we are losing it by gradual attrition. It is not only in the matter of pollution, but as indicated in the blue pamphlet accompanying the invitation to this conference, multiple land uses that are gradually encroaching upon the Bay, together with the water pollution problem, is making the Bay practically unusable and eventually it will become completely extinct.

Presently Jamaica Bay is one of the largest fowl and wildlife refuge areas in this section of the north Atlantic coast. The New York Park Department maintains a special bird sanctuary in the Jamaica Bay area, right in the marshes on the north central part of Jamaica Bay, for thousands of nesting birds; I think it is something like 250-some-odd variety of birds that nest and breed and have their habitat in the Jamaica Bay area.

The fish life, I understand from the fishing experts that the Jamaica Bay waters were used and are still being used by certain species of fish as their spawning grounds, though on a rapid decline because of the water pollution that is getting worse in the area.

The first major attack on this problem was undertaken by the city of New York about two years ago under the New York City Water Pollution Control Act that the City Council passed, and the New York City Department of Public Works has been undergoing an extensive program of building six sewer refuse plants, or anti-water pollution plants, in the northern extremity of the Bay where the major pollution problem has been existing. This is a project that will cost about $125 million, I am told, and it is going very slowly at this time primarily because of the lack of funds. So far only one plant is put up; the other five plants are waiting for the additional funds that the city presently does not have.

So here you have a perfect example of where a partnership between the federal, city and state in the area of water pollution control can really restore a major water estuary area to the use of a large urban center. The Jamaica Bay water body, I believe, is about 10,000 square acres in total area, and it offers an area that could provide, properly built up, a recreational and sporting area for at least a million people living within the New York City area. And it is only with this type of partnership, that is called for in the 1966 Amendment to the Water Pollution Act of the United States Congress, that we can see where the funds will be forthcoming from federal and state sources in partnership with the city -- because here we have an example where a city, a large city, the largest city in this country, is directly involved in trying to restore this large body of water to where it can benefit hundreds of thousands of people. Thank you very much.

CHAIRMAN KLASHMAN: I should now like to call on Mr. Merril Eisenbud, Administrator of Environmental Protection Administration, City of New York.

MR. EISENBUD: Mr. Chairman, gentlemen on the panel, my name is Merril Eisenbud, Administrator of the Environmental Protection Administration of the City of New York, and I am making a statement on behalf of the City of New York.

The City of New York is engaged in a vast program to restore the quality of its environment, and with the help of New York State and FWPCA will spend about two billion dollars during the next decade to abate air pollution, to improve refuse disposal, to make New York a more quiet City, to assure an adequate supply of potable water of the highest possible quality, and to restore the quality of the estuarine environment. The previously separate responsibilities for achieving these goals in New York City have been consolidated recently into a single agency, the Environmental Protection Administration, which Mayor Lindsay brought into being on March 15 of this year.

The rivers, straits, bays, sounds and beaches that comprise the estuarine environment of the City of New York have always been among the most attractive aesthetic and recreational features of the metropolis, but the appearance of the shorelines and the quality of the estuarine waters have suffered from many years of neglect. I am privileged to be able to report today that New York City, in cooperation with its neighboring communities, and with the financial assistance from the State of New York and the Federal Government, is now entering a period in which rapid improvement can be expected in the quality of our waters and shorelines. Today I should like first to report to you on the present state of our program of conventional control over the vast flow of liquid waste that issues to our estuarine waters, and I will then discuss what I believe to be the direction in which our efforts must be directed in order to control the ecological stresses that future developments may place on our estuarine resources.

New York City long ago undertook the classical approach to pollution control, and in the 1930s completed the first of a long series of major water pollution control plants needed to achieve our primary goal, the secondary treatment of the dry weather wastewater effluent from the city. This has been a long struggle in which we have been attempting to overtake a moving target of ever-changing character. We are now treating more than three-quarters of our sewage, and within the next five years we will achieve our goal of providing secondary treatment to the entire 1.3 billion gallons of daily dry weather discharge.

Thirteen modern sewage treatment plants are now in operation, 11 of which utilize modifications of the activated sludge process.

For the record, incidentally, I should like to report that the plant on Jamaica Bay has been operating on step aeration for some time, and for the first time in many, many years wastewaters going to Jamaica Bay are now crystal clear.

The largest of these facilities, the Newtown Creek Water Pollution Control Project, designed to treat a flow of 310 million gallons per day, was put into partial operation in 1967. Within the next five years, with the construction of treatment facilities at Red Hook in Brooklyn and North River in Manhattan, and with the completion of the Newtown Creek Plant and the modernizing of existing facilities at Port Richmond and City Island-Hart Island, we will be affording secondary treatment to the entire 1.3 billion gallons of daily dry weather discharge per day.

Based on the five-year plant averages for flow, influent B.O.D. for the years 1961-1965, with 12 plants in operation, the raw load was about one million pounds of B.O.D. per day. The B.O.D. of the treated effluent was about 300,000 pounds per day, which indicates an overall treatment efficiency of about 70%. This is up to 1965. When our basic program is completed, we estimate that the ultimate B.O.D. load will be 2,200,000 pounds of B.O.D. per day, since an overall efficiency of removal in excess of 90% will be provided.

In order to better achieve this, we have undertaken to obtain "step aeration" efficiency at all of our plants, regardless of the difficulties. New York City has been disinfecting all effluents discharged into recreational waters during the summer season for many years. Now we are moving to install hypochlorination facilities at all plants to meet the State goal of year-round disinfection of all effluents. At this time such facilities are being constructed at the Owls Head Plant on the Narrows, as the first move towards the retrieval of the now closed Sea Gate beaches. Of course, this goal is predicated on comparable treatment and disinfection of the New Jersey discharges profoundly affecting the quality of these former beach waters.

A review of data accumulated for New York Harbor since 1909 demonstrates that our estuary is not amenable to the classic Streeter-Phelps treatment used to predict the D.O. sag and recovery of a simple stream. Hydraulically there are complex and even yet not fully defined interrelations among the Hudson Valley runoff, the oscillating tidal strait misnamed East River, and the Long Island Sound which is out of tidal phase with the mixing chamber of the Upper Bay. Sixty years of data from our Harbor survey, including dissolved oxygen, B.O.D. and coliform concentration, illustrate dramatically how an abrupt decline of dissolved oxygen occurred between the years of 1912 and 1915 in all the major inner waterways of the city as the burden imposed by increasing amounts of untreated sewage reached a critical value.

The waste effluents from New York and its neighboring communities had been increasing steadily, and some condition was reached suddenly which caused the precipitous drop; but the reason for this phenomenon was never satisfactorily explained. Paradoxically, as further load was imposed, with the growth of population and industry in New Jersey and New York, there was no further significant change, with further degradation manifesting itself only slowly in the more polluted arms of the estuary. As successive water pollution control plants were built by New York City, beginning in 1935, the harbor, as a whole, appeared to remain in equilibrium. Of course, there were important local improvements, such as in the Harlem River, when the Wards Island plant went on stream, but the increased treated flow and enhanced degree of treatment were apparently just keeping pace with the increased loads.

To further complicate the picture, the nature of sewage itself changed drastically in the 1950s with the substitution of detergents, coupled with copious phosphate additives, for conventional soaps. In fact, our Bureau of Water Pollution Control was the first to warn of deleterious effects of these factors on oxygen uptake and B.O.D. removal, a phenomenon more important than the frothing of aerators, with which most engineers were then preoccupied. During the same period, our Harbor Survey indicated an anomalous increase in coliform concentration in the receiving waters, at a time when we were disinfecting more of our effluents, and to a higher residual chlorine.

In New York Harbor we are in the awkward position of continuing to build our water pollution control plants with perhaps unnecessary factors of safety since we do have sufficient basic information about the ecology of the harbor to permit an optimum approach to the cleanup program. We were and are sadly in need of a more basic scientific understanding of the subject of estuarine ecology, a subject which I will touch on again in this discussion.

For the past 20 years the city has had plans for the second phase of our program, the construction of Auxiliary Pollution Control Plants to cope with the storm runoff from combined sewers into potentially recreational waters. The initial focus of our attention has been the 30 square miles of Jamaica Bay, which can be made into a multi-purpose bathing, boating and fishing recreational area, coupled with wild life sanctuaries. The Spring Creek Auxiliary Plant, construction of which is now getting under way, with completion scheduled for 1970, will serve as the prototype for six plants designed to settle, degrit and disinfect all combined storm runoff entering Jamaica Bay.

In early 1967, the Department of Interior and the State of New York endorsed a major study of the ecological and hydrological factors related to the creation of bathing beaches in Jamaica Bay. This study has brought together a team of marine biologists, ecologists, bacteriologists, chemists, sanitary engineers and oceanographers who will pool their knowledge and resources in an effort to assess the biological and physical status of the Spring Creek environment before and after the plant goes on stream. The study must even question the validity of conventional coliform standards. The three-year ecological study began last week, and hopefully will provide much needed basic information that can be used generally to predict the effects of new water pollution control efforts on the quality of estuarine waters. It will make a qualitative and quantitative assessment of all marine biota. It will utilize a mathematical model being developed by the Rand Corporation for optimizing the siting of outfalls, beach sites, channel locations or relocations. The model will assess the acceptability of bay outfalls as against expensive offshore outfalls. As the study progresses, it may extend, with Federal help, from Jamaica Bay to the harbor as a whole. The Spring Creek pilot plant and the accompanying study are the key to a 500 million dollar program, since the Auxiliary Storm Water Program envisages some 30 plants for areas such as Eastchester Bay, Little Neck Bay and the Upper East River.

The 35-year program to provide secondary treatment for all of the liquid wastes from the City of New York will thus be completed during the next five years, with construction of the North River and Red Hook Water Pollution Control Plants, and with various modifications of the 13 plants that are already in existence. Should the Spring Creek demonstration plant prove successful, and assuming that Federal and State financial assistance is continued, control over storm water runoff may be achieved by 1980 or 1985.

Thus, beginning at the present time and continuing for perhaps another 20 years, we can expect to witness progressive improvement in the quality of the marine portion of our estuary environment. Millions of inhabitants of the Metropolitan area can look forward to enjoying additional miles of beaches, literally in the heart of our country's largest city. We can indeed look ahead to the possibility that our tidal flats may again be open for shellfish harvesting and that sports fish in greater variety and numbers will return to our surfs, our channels and our coves.

Thus it appears possible that within the lifetime of many of us the marine portion of our estuary will be restored to a quality that has not been seen in the New York area in this century. However, should the quality of these marine waters require less of our attention in another 10 or 20 years, it appears that we will most assuredly be concerned still with another portion of our estuarine environment, this time the fresh waters of the Hudson and its tributaries which we must assume will be used to an increasing degree as a source of potable water for New York City and its neighbors.

In fact, during the past month a report commissioned by the State of New York Health Department and prepared by a consortium of consulting engineers has recommended to our State, County and City officials that the water supply problems of Metropolitan New York beyond the year 2000 can best be met by withdrawal of large quantities of Hudson River water just above Poughkeepsie. Spring runoff which would be impounded in new reservoirs to be constructed far upstate would be released to the Hudson during periods of minimum flow to control the reach of the saline intrusion.

The estuarine portion of the Hudson River has for centuries been of vital importance to the economic and cultural existence of our nation. Regrettably, we and our forebears have failed to document the basic physical and biological features of the Hudson River. Thus, at a time when the potential use of this river for cooling power plants is increasing rapidly, we find that there have been no systematic long-range temperature measurements of this important river. Even more surprising is the almost total lack of information about the flora and fauna of the river over any extended period of time. We will not be prepared to deal properly with the many questions that will be asked about the fresh water portion of the Hudson River unless we mount a far greater effort to understand its ecology in all of its many ramifications.

It is essential that we learn to utilize the river for the enormous economic resources it offers us; but we must learn to do so without destroying its aesthetic qualities and without causing the quality of the water to deteriorate in a manner that may affect its future potability. The Hudson River will continue to support great numbers of vessels for both commercial and recreational purposes, and its waters will be used to an increasing degree to cool the condensers of electrical generating stations. From time to time, pumped storage generating stations will be built in the Hudson highlands.

The great challenge in the years ahead will be to utilize the river in such a way that the public is not denied the benefits that can come from rational economic exploitation, but to do so in a manner that preserves the river's aesthetic and recreational qualities. No such rational approach is possible until we obtain far more basic knowledge about the ecology of the Hudson River than is now available. We must understand the manner in which the populations of flora and fauna are affected by changes in temperature, turbidity, chemical pollution and other factors that may result from technological changes throughout the reaches of this river and its tributaries. We must understand the role of the sediments of this river, the manner in which they sequester and release pollutants, and the manner in which the sediments participate in the ecology of the river system. For example, my former colleagues at New York University have found that the sediments are polluted by absorbed organic chemicals of great complexity.

Incidentally, the identity of these chemicals has not been completely understood.

In all fields of investigation, be it in the physical, biological or social sciences, whether an observed change is due to the seasonal or annual variations that occur normally or is due to an imposed stress on the system can only be interpreted when we know the normal range of variability. In the decades ahead, many questions will arise as to the effects of stresses on the river and it will be possible to answer these questions intelligently only if we begin now to undertake systematic observations of the ecological interrelationships that exist within this great river system.

We will face many difficult questions of a regulatory nature. It will be necessary to establish maximum permissible concentrations for toxic and radioactive substances, and it will be essential that realistic standards be developed to limit the changes that can be permitted in the temperature of river water. Regulations may also be necessary to minimize the mechanical effects of recirculating cooling water through condensers or through pumped storage systems. It will not be possible to establish such standards on a rational basis until far more basic research has been completed to define the sensitivities of the native species in the river system to the specific stresses being considered.

I have reviewed briefly the status of our water pollution control program as it affects the marine and fresh water portions of our Hudson River estuary, and I have called attention to some of the problems that can be expected in the future. For more than a generation to come, the demands for new facilities will require a vast infusion of young engineering blood into the whole field of environmental control.

Here in the City of New York, the newly named Department of Water Resources has inherited a splendid tradition from its predecessors in the Department of Public Works and the former Department of Water Supply, Gas & Electricity. This tradition, however, has been maintained mainly by a relatively small group of men who joined our City Government during the depression years and who became world renowned for their pioneering work in the field of water pollution control as well as water supply and distribution. Our future requirements will not be met without a vast new training program that must begin immediately. The work is no longer within the province of the sanitary engineer exclusively, and in increasing numbers the environmental sciences must also attract first-rate chemists, biologists, physicists, oceanographers and chemical engineers who can be trained to operate as a team to deal with the many complex ecological problems which we must study.

We see also that there is a need for ecological studies on a far more vast scale than has been undertaken to date. For example, I have estimated that in order to obtain the basic ecological factors needed for predicting the effects of pollution control efforts during the next decade, we should begin immediately to spend at least $2 million a year studying the ecology of the Hudson River estuary. Until the past three or four years, there was essentially no money spent on basic research concerned with the quality of this estuary, and the available financial support for such studies is as yet very inadequate. Let us hope that the National Estuarine Pollution Study, an outgrowth of the Clean Water Restoration Act of 1966, will provide the means for obtaining the basic facts about our complex estuary whose quality we seek to restore and preserve.

To summarize, after nearly 40 years of construction of sewage treatment plants in the City of New York, we are nearing our goal of providing secondary treatment for all the liquid wastes formerly discharged to our estuary. The latest plant to be approved is the North River Water Pollution Control Plant which will provide more than 90% B.O.D. removal for more than 200 million gallons of sewage per day. Construction has begun of the interceptor to service this plant.

The advantages of secondary treatment of dry weather waste water is offset in some parts of the city by storm water overflow of the sewage system. As is well known, this has been a particular problem in Jamaica

Bay, where we have now received authority to design the first of a series of Auxiliary Pollution Control plants.

It is likely that the fresh water portion of the Hudson River will be used for drinking water in increasing amounts in the years ahead, a factor which will require that the river be maintained at the highest possible quality. It is likewise important that we learn to obtain the benefits of the Hudson River as a technological resource without causing the quality of the water to deteriorate and without sacrificing the aesthetic character of the river and its valley. These objectives are currently handicapped by a lack of knowledge of the basic ecologic facts about the river. A long-range research program aimed at understanding the complex ecological relationships within this estuarine system is essential to its orderly future utilization and conservation. Thank you, Mr. Chairman.

CHAIRMAN KLASHMAN: Thank you.

MR. DE CAMP: I notice you have talked a great deal about the water condition itself, but I don't see much mention about the fact that the land use surrounding this water is a highly important factor in what happens to the water, and I wonder, in your planning, is this given due consideration?

MR. EISENBUD: This is very important. Assemblyman Posner touched on it. We have been delighted with the recent efforts of the Hudson Valley Commission to deal with the question of land use of the upper Hudson River and the middle River. Within the City of New York, we have not given as much attention to this question from the ecological point of view as perhaps we should. I think that what is vitally required, is a sensible approach to the multiple use of existing wetlands.

I think that somewhere between the desire of many of us to see, for example, Jamaica Bay be kept or rather restored to its pristine state and kept that way forever and the desire to see it exploited for recreational development or economic development -- there must be some middle ground. I think one of the things that they have got to learn to do in the next generation is to control the development of water works in such a way as to restore and retain the esthetic quality and recreational quality and at the same time without denying to ourselves the economic advantages that might be available to us. And I think the same situation exists essentially in all.

CHAIRMAN KLASHMAN: Thank you very much. I would like to mention again that we are going to limit the statements to ten minutes. We made this one exception in the case of New York City, because Mr. Eisenbud's statement proved to be not only his own but the views of many of the department in the City of New York.

I should now like to call on Mrs. Norman Parsons, League of Women Voters of New York-New Jersey and Connecticut.

While Mrs. Parsons is coming down, I would like to introduce two members of my staff: Mr. Walker, who is standing up. Mr. Walker is Director of the North Atlantic Water Quality Management Center of Metuchen, New Jersey. Is Mr. Sutton here? (pause) We will introduce him later.

MRS. PARSONS: Members of the panel and guests, the Tri-State Committee of the League of Women Voters of New York, New Jersey and Connecticut was formed to explore mutual problems of our metropolitan area. Its Water Resources Committee was organized to coordinate study, planning and action in relation to our shared waters. I am Mrs. Norman Parsons, Chairman of the Water Resources Committee.

CHAIRMAN KLASHMAN: Can you hear Mrs. Parsons?

VOICES: No.

CHAIRMAN KLASHMAN: Can we get the volume of the microphone turned up? Try again, Mrs. Parsons.

MRS. PARSONS: Can you hear me now?

CHAIRMAN KLASHMAN: I would appreciate it very much if those of you in the back cannot hear, speak up; because it is deadly being at a meeting and not be able to hear the speakers.

MRS. PARSONS: League members have been actively concerned with water supply, water quality, and water management since 1956. River basin studies began 11 years ago. During this time, many of us have come to realize the importance of our estuaries for fin-fish, shellfish, migratory birds and areas where our citizens may retreat from the concrete and noise of metropolitan living.

We have also come to realize the magnitude of the various forms of pollution resulting from man's intrusion into nature's carefully balanced environment. Municipalities and industries have used our waters for waste disposal, often beyond their recouperative capacity, because that was the easiest and cheapest way. Solid wastes have been introduced into marshes and wetlands as landfill. Harbor dredging and the indiscriminate dumping of dredging spoils have had disastrous effects at times.

A new and fast-growing threat to our estuaries is the enormous quantity of water needed to cool the present generation of nuclear power plants, and the resultant release of hot water into a marine ecology which developed in cool water.

Many statements present the case for industry, conservation, power facilities and other specific areas. All of these claims on our resources are legitimate. Few, however, argue the value of water-related recreation other than boating and the importance of aesthetics in the human environment, probably because they are hard to define. Yet these too are legitimate claims.

Many of the problems result from the activities of man acting for an immediate local benefit without thought of his neighbor; yet an estuary, no matter how large, is one physical entity, and piecemeal developments which serve local goals may lead to irreversible loss to the whole.

With this in mind we should like to suggest some questions for consideration by our officials at all levels of government:

1) Is it possible, under our present structure, to evaluate and coordinate plans of the hundreds of independent municipalities, three states, and many federal agencies, to see that they neither conflict with each other nor neutralize each other's aims? Responsibility is divided, but the problems are region-wide.

2) Is any consideration being given to short- and long-range effects on the general good before action is taken?

3) Should every decision be made on the basis of cost, or tax ratables, or should the quality of the environment be considered too?

4) Is there a need to develop a balanced program with all levels of government and the public, acting as equal partners?

5) Should provision be made to bring together the needs and desires of the various groups, including the public, for

discussion and debate on alternatives before a decision is made at any level, or by any agency of government?

As the needs of corporate and governmental entities change and grow, so do the needs of our people, who are losing their birthright of freedom to enjoy a pleasing natural environment. Let us remember that it is on the citizen that the life of government and industry depend.

Thank you for the opportunity of appearing before you.

CHAIRMAN KLASHMAN: I should like to call upon Mr. Mann.

MR. MANN: Mr. Chairman, members of the panel, guests, my name is William L. Mann. Mr. Thurn, Chairman of the Water Pollution Control Committee of New Jersey State Chamber of Commerce regrets that he is unable to be here today. I am appearing here as a member of the Committee, to present this statement on behalf of the New Jersey State Chamber of Commerce.

We appreciate your invitation to participate in this public meeting concerning the pollution of coastal and estuarine waters. Our comments will be limited to problems involving those waters under New Jersey jurisdiction, including waters to which authority has been delegated under the Interstate Sanitation Commission and the Delaware River Basin Commission, inasmuch as our Chamber represents commerce, industry and business interests within those areas.

We wish to commend the Federal Water Pollution Control Administration for scheduling these public meetings throughout the nation in order to have the benefit of views from all those who have an interest in how the estuaries can best be developed and preserved. A broadly-based study of this type should provide valuable guidelines and practical suggestions for optimum uses of each individual estuary. Each estuary, of course, is distinct unto itself. Each has specialized characteristics -- chemically, physically, biologically, and is the subject of different present and potential usage.

New Jersey is in a unique situation geographically. Heavily urbanized, we share one of the world's largest ports with our neighbor, New York, and other major port facilities with neighboring Pennsylvania and Delaware. In Northern New Jersey alone, the harbor facilities constitute the greatest shipping center on the Eastern seaboard. The continuous growth of these port facilities reflects the demands placed upon commerce, not only within the area's heavily-populated centers, but also in many other metropolitan centers throughout the Northeastern United States.

New Jersey's economy also includes one of the most substantial segments of the recreational industries, much of which is located along our ocean coastline. And with our rapidly growing population, from 6.1 million in 1960 to an estimated 7.1 million in 1968, New Jersey cannot afford to allow any deterioration of this vital environmental asset.

In the literature which you prepared as background for those planning to participate in these meetings, you indicated interest in hearing answers and positions on several specific questions. Perhaps the most important of these questions, from our point of view, is this one: "What system of management, local, state and federal, will best provide for development and protection of our estuarine resources?"

We feel that any system of management for an estuary must provide a close working relationship between the control agency and the estuary's users. Both must recognize the realities of existing usage, the broad potential benefits of ideal usage, and economically feasible steps toward their achievement. Here in New Jersey we have both intrastate and interstate estuaries. Moreover, we have a third form of estuarine management where our Delaware River basin waters are concerned, because the federal government is an equal partner there in a five-way compact involving New Jersey and its three neighbors on the Delaware. This particular management system could, in our opinion, be applied very fruitfully in other cases where there is need for a management system to cover a river, its tributaries and estuaries. The Delaware Estuary Comprehensive Study, with which your organization is already familiar, in its effective utilization of advisory groups of water users, provides an excellent mechanism for delineating the needs and wishes of the area's people.

In the matter of pollution control, we feel that maximum use should be made of existing agencies, particularly where they have clearly demonstrated an ability and a willingness to devise and pursue effective pollution abatement programs.

In the New York-New Jersey metropolitan area, the Interstate Sanitation Commission, while working under conditions that are far from ideal, has nevertheless achieved increasingly effective control over emissions to interstate estuarine waters. The heavy population growth of the New York-New Jersey metropolitan area has long exceeded the development of discharge control facilities. However, the problem which the Commission has been grappling with has, in the past few years, gained much greater public recognition, and greater financial resources have been developed at both the private and public level to achieve the goals this body has set for the waters within its jurisdiction. The gap, in other words, has begun to narrow and we can look forward to greater rate of improvement in the future.

We must also emphasize that, under the aegis of the New Jersey State Department of Health, water quality criteria have already been established for both fresh and tidal waters in New Jersey. Virtually all of these criteria have recently been approved by the Secretary of the Interior. They will provide a means for effective management of these resources, and in the Department of Health we already have the means to enforce them.

Thank you once again for your invitation to participate in this program.

CHAIRMAN KLASHMAN: Thank you very much. I would like to call on Mr. Alexander Aldrich of the Hudson River Valley Commission.

MR. ALDRICH: Mr. Chairman, members of the panel, I have the honor to represent the Hudson Valley Commission of New York, which is a State agency with deep concern for the scenic, historic, recreational, and natural resources of the Hudson River, and also the full development of the economic, commercial, residential, agricultural and other resources and, of course, half of this river is an estuary and it is within its concern.

I want to start my remarks with a modest disclaimer. In spite of the suggestion contained in our name, the Hudson River Valley Commission is not directly responsible for the elimination of pollution in the Hudson River. A lot of people think we are. This is the function of other New York State agencies joined for that purpose under Governor Rockefeller's Pure Waters Program, and especially the Health Department, ably represented here today by Assistant Commissioner Haberer of its Division of Pure Waters.

Where matters of pollution control are concerned, the Commission always defers to the Department, and it is a pleasure to identify the Commission with Mr. Haberer's statement, which I understand is being filed at this public meeting. But I also understand he is not going to read it. I particularly would like to identify myself with those parts of the statement which especially refer to his recommendation concerning dredging and the thermal load on the river caused by electric power generation.

I also parenthetically would like to thank Dr. Eisenbud for the brief commercial he gave us and use his remarks and Capt. De Camp's questions about land use to get into the area in which the Hudson River Valley Commission is presently concerned, because its principal role is directed toward land use along the banks of the river.

And, inasmuch as pollution control programs have land use implications, we are deeply interested in these proceedings today and have a number of suggestions for the Department of the Interior to consider in assigning priorities. These suggestions are in addition to those contained in Commissioner Haberer's statement.

First of all, we urge that very thorough efforts be made to coordinate your programs with those of the U. S. Army Corps of Engineers and other public agencies. In recent months I have represented the Hudson River Valley Commission at meetings and hearings held by the Interstate Sanitation Commission on boat pollution, by the Corps of Engineers on riverfront and channel debris, and by the Corps again, on widening and deepening the main channel of the Hudson. There are other meetings that I have been to, to discuss other matters pertaining to the increasing population in this tremendously populated area, and the demands of this increasing population on land use along the side of the river.

There is a risk, it seems to me, that failure to coordinate these and other programs with the principal pure waters effort will result in duplication and waste.

Our second suggestion involves land use more particularly. Pollution control involves buildings, especially sewage treatment facilities, nearly always located along the main stream of the Hudson or any estuary we want to talk about. In the past 11 months, since the Hudson River Valley Commission project reviewed responsibilities began to be implemented, in the 132 projects that we have reviewed, the Commission's project review staff has studied and approved, from time to time with modifications suggested by us, the location and design of nine such major sewage treatment facilities, all of them municipal, and several industrial treatment facilities. The municipal treatment facilities, the nine facilities I bear reference to, have all been developed under the State Pure Waters Program.

Now, it is difficult to create a sewage plant of distinction. In heavily populated areas, however, where design criteria are becoming increasingly important and where people are now turning back to face the river for recreation especially, excellence in design and appropriate location for these facilities are matters of widening public concern. My second suggestion is, therefore, that the FWPCA include in its program the requirement of architectural distinction and intelligent attention to adjacent land use, wherever a structure is to be created.

The third suggestion I make is related to the second, and it has reference to several of the things that Dr. Eisenbud said. Multiple use of land and other facilities, especially in heavily populated areas, is a matter of urgency. An intelligent division of function is often the happy solution of many problems. An example might be the creation of a park on top of the proposed new sewage plant on the upper west side of Manhattan. Now I hasten to suggest this as a possibility only, since the Hudson River Valley Commission has not yet reviewed this matter and has taken no position on its design or its location.

Another example, which is a little bit less tentative and a little bit further away from home, is the proposed use of the old Erie Lackawanna right-of-way between the Nyacks and Piermont for both a walkway, and a bicycle way, an area under which a main trunkline sewer is to be constructed. These multiple uses are something that we should be thinking about very carefully every time we talk about land use for pure water.

My final proposal concerns financial assistance. Since Governor Rockefeller initiated the Pure Waters Bond Issue, the Federal Government has had a superb opportunity to join with the State of New York in showing the rest of the nation how to clean up its waters. Up to now the Federal share of this has been funded only to a token extent.

Perhaps the most important job the FWPCA can do is to bring the Federal Government into full partnership with the Empire State on this matter of such deep concern to our grandchildren. Thank you.

CHAIRMAN KLASHMAN: I have a couple of observations to make. First, I think it is very important that we talk about the Federal Government and funding, to recognize that the Federal Government is not ours--I mean the FWPCA -- but it is yours as well as mine, and there is no need -- this is not the proper time for us to discuss the role of the Congress in making appropriations. This certainly is a role that we are much much aware of, and they are aware of it with the pressures upon them. I am sure they are doing the best they can in their wisdom, but this continuous reference to FWPCA's role, I think it leads people to believe that we have an influence on these appropriations which, of course, is not true. The Congress gives the appropriation; it is our government.

MR. ALDRICH: I never let an opportunity go by me.

(Laughter.)

CHAIRMAN KLASHMAN: I am glad of that.

MR. ALDRICH: I have let my Congressman know how I feel. As a matter of fact, I once ran for Congress on this issue and I lost.

CHAIRMAN KLASHMAN: The other thing I want to ask about is, you mentioned that the Hudson River Valley Commission has not commented on the North River plan as far as the estuary is concerned. Do I understand that you do not intend to comment on this?

MR. ALDRICH: Oh no, we will definitely comment on this. As a matter of fact, we are in preliminary projects on this view. Our status gives us 45 days in which to -- actually, it gives us 15 days in which to review a project; in a project of this magnitude, you can imagine that 15 days is not very much.

CHAIRMAN KLASHMAN: Your comments would be related to the exterior appearance of the plant?

MR. ALDRICH: Yes, if the city decides to locate it there.

CHAIRMAN KLASHMAN: The city already has actually awarded a contract.

MR. ALDRICH: I understand there is a question as to whether the design is going to remain the way it is; I don't know.

CHAIRMAN KLASHMAN: I think there may be a question about the exterior design.

MR. GLENN: The plans have been approved.

CHAIRMAN KLASHMAN: The plans have been approved and construction......

MR. ALDRICH: We have not yet initiated our formal 15-day period.

CHAIRMAN KLASHMAN: But this has to do with the exterior appearance and the park.

MR. ALDRICH: That is the principal matter; and the possible cultural use.

CHAIRMAN KLASHMAN: I am sure if this is your position it will be very valuable to the city and all concerned because everybody wants a beautiful appearing plant.

MR. ALDRICH: Some people don't want any plant at all.

CHAIRMAN KLASHMAN: You are right. I would like to now call on Mr. Stephen Markulin, UAW, Local 736.

MR. MARKULIN: Mr. Chairman and gentlemen, my name is Stephen Markulin. I represent the UAW, Local 736 in New Jersey, a small local. I speak just as an individual, a citizen and a taxpayer. I didn't come with a written speech, just a brief.

Eleven years ago an industry moved into my community: Republic Wire. In the rear of this industry we had two beautiful lakes that took in about four to five vast areas of natural wildlife, for fishing, for youngsters to go skating; this is a fresh water lake. This lake runs off into marshlands that were ideal for trapping. In my day we used to make a dollar. Today this is devastated by sulphuric acid with a pH of 1.2.

Since Republic Wire moved in, I approached the city fathers; as a first step, went to the freeholders, wrote to the State, State Board of Health, personally saw Dr. Roscoe Kandle, wrote to Mr. Sullivan, called in the Fish & Game.

Eleven years have gone by, over hundreds of acres of wetland that used to supply what we called killies in Jersey and ate off the mosquitoes. These killies have been wiped out by the sulphuric acid that constantly flows out of the Woodbridge River which empties into the Arthur Kill and into Raritan Bay. This is only one small industry. In our municipality in an area of about 15 miles we have 16 such violators. I have listed, drew maps, and sent them to the State, Board of Health, to the Fish and Game Department, because they pertain to streams that were being stocked by the Fish & Game, to no avail. Just about two months ago I called in the State Board of Health again. Mr. Christian Hoffman appeared -- to my amazement -- as we went in to the back of this industry to find the violators as the acid came out of the plant, the general manager and the owner of the plant met us, as we say, in the boondocks. They wanted to know what we were doing there. We were checking on the acid that, I had complained for years, is still coming out of the plant. To my amazement, a few days later I picked up a newspaper and the owner of the plant, Mr. Giller, has got a citation from our good Governor, for being a small businessman bringing $200,000 a year business to a $4 million a year business; and today he is still dumping the acid into the natural pond which now has a reading of 1.2 pH. I am not a chemist, but I have had this analyzed, at my own expense; the State would not -- they took samples, but I never got a report. I had to take it personally upon myself, and I have to work for a living, as most of you do; but this has hurt me because our natural waters are gone. Thank you, gentlemen.

CHAIRMAN KLASHMAN: Are there any questions? I would like to call on Mr. Michael Antonelli, Ulster County Citizens for Clean Air.

MR. ANTONELLI: I haven't a prepared statement. I am going to make it very brief, and for the benefit of the representative from the New York Department of Health -- Mr. Haberer, I believe it is.

I think you should take a good look at the deplorable condition of the Esopus Creek which runs into the Hudson River. The trees there are coming down just like leaves falling off trees in the wintertime, and they go right into that creek which eventually flows right into the Hudson River and makes it very hazardous not only because of the pollution but because of the children who are attempting to fish in that area along the creek. And, by the way, the Cromakill River runs into the creek and we have had, just recently, on Decoration Day the deplorable condition where the water flowed into residential places along the creek, and I don't want to say too much, but I think it ought to be looked into and the matter should be taken care of immediately before something disastrous really happens. Thank you for your attention.

CHAIRMAN KLASHMAN: Are there any questions? I would now like to call on Mr. Fred Baker, Jr., Smith Creek Boat Association of Sewaren.

MR. BAKER: Mr. Chairman, ladies and gentlemen, it is a great honor for me to be here today. I had no idea what was going to befall me as a member of Sewaren or the Smith Creek Boatmen's Association.

Our biggest problem is fly ash. I have a letter here where we have certain statements from different people who have taken surveys.

Now, confirmation of a letter from Mr. James Rankin, Chief Engineer of the Navigable Division, Department of Surveys, that a survey of Smith

Creek at Sewaren will be made this year. This survey was made, and an estimate of $80,000 was the figure they came up with in order to dredge and clean the mouth of the Smith Creek. $40,000 of this to be borne by the State; the additional $40,000 by the Town of Woodbridge.

However, we as a group of 29 homeowners along the river, 500 boat owners keeping boats on the creek, an outboard association which has a launching ramp, facilities for recreation and also a place for food and such -- we were not important enough so that the $40,000 is not forthcoming to us.

Now, along with this we find out that Mr. Karmet (phonetically spelled) of the Raritan Valley Clean Water Association has found out that the fly ash has been filling in this creek at the rate where he found that eight years ago we had eight foot of water at the mouth at low tide; today we have eight inches. That is the rate of the fly ash coming in.

Now, coming back to another report which is on pollution taken from the Federal Water Pollution Control Administration of Washington, D. C., we find that fly ash water from a power plant settling into a pond in another state escaped and has killed 54,000 fish. This was in the 34 mile stretch of stream adjoining the state. A settlement was reached out of Court between the Game Commission and the Fish Commission with the companies. Now we are talking about Smith Creek where the headwaters are 140 acres. We are talking about a control gate which was put in by the power company. Now this company has put in this control gate which is supposed to open and close with the tide, so that the water will be controlled and flow through into the swamplands above; it does not. It has been closed, which deadends the creek so that all of this fly ash which is deposited by the public utilities fro above comes down across the creek; as the creek rises very slowly with the tide, having no flow whatsoever it merely settles across the front. And in eight years time we have lost close to seven foot four inches of actual navigable water. I thank you very, very much.

CHAIRMAN KLASHMAN: Are there any questions?

MR. DE CAMP: Will you tell us where Smith Creek is located?

MR. BAKER: Smith Creek is located on Staten Island on the Kill.

CHAIRMAN KLASHMAN: From what you say this has been going on and it is a question of the use of the estuary as a filling for -- What power company is that?

MR. BAKER: This is the Sewaren Public Utility.

CHAIRMAN KLASHMAN: What were the water usages of this stream before the power company got in there?

MR. BAKER: This has been used over a great period of time for boating, for fishing, for water skiing and everything combined, plus the fact that there is a small island adjacent to this that was intended to be turned into a public recreation area. Now, I understand that this is all gone by the board.

CHAIRMAN KLASHMAN: Thank you very much. I should now like to call on Mrs. James Wilson of The South River Farrington Watersheds Association.

MRS. WILSON: My name is Mrs. James Wilson from #1 Tompkins Road, Old Bridge, New Jersey, the location of the Raritan Bay area of Madison Township. The South River-Farrington Watersheds Association recommends three items as follows:

1) We are in favor of stronger pollution measures;

2) Urge stronger penalties for violators of water pollution and stiffer fines for these same violators;

3) To extend Federal jurisdiction to all waters since estuarine waters are related to all natural drainage areas.

Personal Experience:

As a resident of Madison Township I had a personal experience with the polluting of a great natural area zoned for recreation, the Cheesequake State Park in Madison Township.

On June 21st I received a call from a Sayreville resident pertaining to a garbage dump being operated in my own town of Madison, and the garbage was being left uncovered at the base of a tributary leading to Morgan and Cheesequake Creek. I took a ride to the location and found mounds and mounds of garbage being dumped and then being left uncovered.

I called my local Health Officer in Madison Township to inform him of my findings, as I knew that if this was a sanitary landfill operation the operation at this time was in violation of State Sanitary Refuse Disposal Laws under Chapter #8 established in the State Department of Health.

It was a Friday night and the office was closed; no answer here. I proceeded to call our Board of Health President, Mr. Spiros Columbus, and he was not home from work. I called him again around 7 P.M. that same night, and explained what I found. He told me he would contact Mr. Rice, our Health Officer, and call me back and perhaps we could all go up together on Saturday morning, the 22nd. I agreed to go. I never received any more calls from anyone on Saturday.

I went back to the area again on Saturday and found the Earthco

Shovel Truck pushing the garbage into the creek. I took these pictures of the operation to show that the garbage was still left as I had seen it on Friday.

At 4:30 Saturday afternoon I went to our local Police Station to file a complaint against the Township of Madison and the Board of Health, and was told I could not do this as the Violations Clerk was not in. When I explained to the police about the very unhealthy conditions in the area and that this condition was against the law, they told me they had not been informed about the dump and that they would send someone up to look at it.

In the meantime, the resident from Sayreville who had called me contacted his own local Board of Health office in the Borough of Sayreville, and they also had put our local police department on notice that very Saturday morning at 11 A.M. Sunday the conditions remained the same. I called Mr. Dealy Sunday afternoon at 2:30 P.M. and left a message to call me. Mr. Dealy is one of our Councilmen in Madison Township. He never called me back.

Monday morning I went back to the dump site and took more pictures; conditions were still as I had seen them Friday night. I called our local Board of Health Officer, Mr. Nicholas Rice, Monday morning at 10:30, and asked him if Mr. Columbus had contacted him about the conditions at the site. He told me he had not been up there yet, but that he had called the State Department of Health in Trenton and would go up on Tuesday when they would arrive.

I immediately called the State Department of Health in Trenton and spoke to one of the men, Mr. De Nito, in the Division of Clean Water.

He referred me to Mr. Charles Ghrenrich who is one of the men in charge of Sanitary Landfill Operations in the State. I explained the conditions and he told me that Madison Township had not called him, but that the Secretary of the Board of Health in Sayreville had called him and told him about the garbage going into the waters in Sayreville and to please come down to look at the situation.

Mr. Ghrenrich told me to ask the Health Officer and the Chief of Police in Madison Township to close the landfill operation in the event they saw it was in violation of the State Sanitary Landfill Code of Chapter #8. This was their jurisdiction. Mr. Ghrenrich told me he would be down in the early part of the afternoon on Tuesday.

On Tuesday morning, June 24th, conditions were changing. Trucks came and went covering the exposed garbage which had been polluting the local waterways. Why? Because the State representatives were coming down and we had to have a good showing. This was a 20-minute inspection, and Mr. William Fascella from the State Department of Health was present along with the Sayreville officials. The only difference in Mr. Fascella's appearance was that he was sent down to Madison Township to help recommend proper sites for a sanitary landfill, not to come down to one that was already established.

Our local Board of Health Officer, Mr. Nicholas Rice, showed up along with the Sanitarian, Mr. James White, to investigate the landfill site. It was a big show for the State people. The Mayor of Sayreville, Mrs. Mary Kerr, also said she was not convinced that the garbage and solvents being dumped there were not polluting the local waterways. Along with all of this there is a 42-inch natural gas pipeline running a few feet right in front of the dump, and the Transcontinental Gas Company representatives were called down to the site on Monday to investigate the danger of solvents being strewn near the area and especially on soft and unstable grounds. The heavy equipment going over the grounds were, as one reporter put it, "a real time bomb".

Now we are going to have pollution on the north side of Cheesequake State Park. This is all virgin land. On the south side of the park we have Nappi Trucking Company, which has been a known polluter on the south side of Cheesequake State Park. Nappi Trucking Company cleans out their chemical trucks into a settling pond, and from there it drains into the Cheesequake Creek area. In this vicinity we have homes with private wells. The State has not moved on Nappi Trucking Company, although they have known that about them for years.

Tuesday afternoon Mr. Charles Ghrenrich never showed up at the landfill site in Madison Township to inspect the site. But on Wednesday afternoon he did show up. At first he gave the dump a B rating; but after closer inspection he gave it a C; and he made recommendations to install fire equipment near the site. Most of the dumps in the State of New Jersey are classified U2 or U3, so ours is considered one of the finest, which in my opinion is not saying much for the State.

On Wednesday night at our local Madison Board of Health meeting in Madison Township, my local officials were more upset over the publicity than the actual fact that the so-called sanitary landfill was in violation of our State laws. I really took a brow-beating from my local officials because of bringing this to light, but I am going to continue to keep right on going, as at the present time this is still polluting our local waterways.

The damage has been done. No one from the State has even as late as today analyzed the solvents taken from the stream on June 26th. Every time we call the State Department of Health for some information on this no one wants to hear us, and everyone is not there. The State Department has just sent a letter, as late as July 8th, to my Madison Township Council regarding this site. It was never read at our meeting on the 15th of July. Mr. Richard Sullivan assured everyone in his letter that the dike was well under construction near the site and was almost completed. As late as Sunday, July 21st, there is no sign of a dike or fire equipment, and the landfill operation is still in violation of State laws.

Why is everyone hiding? What has our Township got to hide? The mere fact that Mr. Seymour Sinnott, who is the owner of Global Landfill Reclamation Corporation, and Lesinn Corporation which is the owner of the land, ordered me off the area on the day the State representative came down to investigate only proves that they have something to hide.

On July 4th the Borough officials from the Borough of Sayreville went down to the site and found the garbage still uncovered and came down to our local Police Department to inform them of this. "The Health Officer can't close this operation down," they were told, until they contact the Township Clerk, Mrs. Mary Brown. This I don't understand at all. Nothing has been done as yet about the situation.

This is only one small incident among many in the Raritan Basin, but this is a definite downgrading of the aesthetic value of this tremendous open space, recreational fishing and trapping area. The best use would be to keep this State Park and all the streams, tributaries of

Cheesequake Creek free from polluters of any nature, to bring about the best of its resources and capabilities and to upgrade it to its best advantage, as these all go into the Raritan Bay.

Now we have Laurence Harbor-Cliffwood Beach closed. Duhernal Lake also is closed in my town which is connected to DeVoe Lake in Spotswood. I believe it was last year or two years ago, the Helms Tobacco Co. had dumped an amount of endrin into the waters below their plant in Helmetta and drained into the Duhernal Lake system.

If any monies should be spent in the future they should be spent at the seat of the profitable pollution. The example I have given you shows how the contractors and corporations involved -- if you check into them as I have and find that attorneys and relations are all involved in the buying up of our lands along the coastal waterways and in some way or another are connected to the big top politicians in our State of New Jersey offices. It appears to me that these laws were written for all people, not just for a few; and that the big trucking firms and big industries can get away with polluting our waterways and destroying everything we have left.

I would ask that a complete Federal investigation be made into the State Department of Health first, before any monies are wasted on further study of our estuaries. If we don't have the local reins and we do have to rely on our State people to help us and they can't help us, then the only one left is the Federal authorities.

CHAIRMAN KLASHMAN: Are there any questions? I now call on Dr. Charles D. Gates.

DR. GATES: Thank you. I can't pretend more than any other individual to represent Cornell University at this hearing; but I think I can speak in behalf of the several individuals, some of the individuals who are interested in the problems which are posed by the question that is being considered today.

My name is Charles Gates. I am in the College of Engineering, Department of Water Resources Engineering at Cornell University.

Everybody has several times repeated the need for the collection of more data for the development of more knowledge as a basis for attacking the problems of managing the estuarine environment. I would like in this connection first, before I turn to the specific problems which were posed in connection with this hearing, like to mention some of the contributions that Cornell is making in the development of knowledge and the collection of data in terms of current and anticipated research.

It hardly needs to be emphasized that any major educational institution, certainly a large university, does have a stake, is interested and is committed to fostering both the sound management of the nation's land and water resources and in effective environmental control. With the wide range of disciplines and talents located at the university, it is inevitable that many of these individuals would, through choice, turn their efforts to the solution of a wide variety of problems; and the problem at hand, the management of our estuarine resources, is such an example.

The recognition of this basic responsibility and this commitment to help in the solution led, within the last half dozen years, to the formation of a Cornell University Water Resources and Marine Sciences Center, and more recently a Center for Environmental Quality Control.

These Centers serve to facilitate communication and cooperation between individuals, among individuals on the campus, cooperation that cuts across the traditional departmental lines and permits interdisciplinary approaches to problems once again of which this is a good example -- where there is a need in the development of knowledge there is a need of physical scientists, for social scientists, for biological scientists and engineers and for the other disciplines.

I would in response, perhaps, to some of the questions that have been raised about the need for further knowledge, I mention a few current activities that are being carried on and hopefully will go a long way in developing this knowledge. For example, one of our staff members has been for several years anticipating the problem which we have been discussing this morning, one of the problems -- the eutrophication of tidal waters. I am sure that most of you recognize this term "eutrophication" as referring to the enrichment of water, of which certain estuarine waters are a prime example. The enrichment of these waters with nutrients from a variety of sources. For example, industrial and municipal wastes--you have heard some very graphic examples mentioned here by the previous speakers of the dramatic effects of the drainage of industrial wastes into natural bodies of water and the resultant destruction of the normal environment.

Another effective cause of the -- maybe it's a rather different one, namely the production in these waters of growths that change the character and the quality and therefore the usefulness of these waters; eutrophication is such an example. In Great South Bay on Long Island we have an example where the addition of nutrients, that is, particularly phosphorous and nitrogen, have led to the growth of -- have led to a quality of growth which in turn damages the shellfish industry which has flourished, or did flourish there for a long time.

The basic problem remains here in understanding the interrelationship between the adding of nutrients and the response, the ecological response of waters in terms of how much nutrient can you permit before the growths shall we say, get out of control instead of remaining in ecological balance.

The problem of the pollution of estuaries by pesticides is another of the problems which has grown in recent years with the very tremendous increase in the use. On the land here we have this example of the relationship between the land and the water which borders the land, which together make up the estuarine system. As we add increasing amounts of pesticides, many of these act as waste, an exotic form of waste, which drains ultimately into estuaries, which substance in the estuaries then is in some fashion or other physiologically incorporated in aquatic organisms and may ultimately be incorporated in the food chain. Certainly here is an example of the pollution of estuaries as a result of land use, which has very serious implications from the point of view of health in terms of using the fish, and also in terms of destruction of the natural ecological environment on which the continued usefulness of estuaries is dependent.

One of the earlier speakers referred to -- and I think very observingly -- the need of planning as an element in the management of the estuarine zone. At least two of our staff members have been working on Long Island in an attempt to see how the introduction of the planning function could assist in the management of the estuarine resources on Long Island.

Looking briefly here at the specific question, how can we move to manage these resources, these estuarine resources, in a more effective manner than has been the case to date? The fact that we cannot presently fortify the total value of an estuarine system as a combination of land and water resources with many potential uses neither lessens this value nor uses its urgency for public action to save these truly irreplaceable resources. The proximity of estuaries to large metropolitan populations underlines the necessity for prompt legislative action.

The continuing destruction of estuarine land and water serves further to emphasize the need to protect both the quantity and quality of this resource, of continuing assaults, an example of which has been set forth several times this morning and I am sure will be this afternoon.

What is more frustrating than the individual who feels helpless in viewing the destruction of this resource and finds no response from the regulatory agencies to which he or she must turn? At the same time that we move to stop damaging the quality of the estuarine environment that is polluting it, we must recognize the growing pressures on the quantity of the environment.

Here we are referring to the fact that several figures have been mentioned -- whether we look at San Francisco Bay, an example far away from home, or whether we look at Long Island or New Jersey, this tremendous pressure to fill; and this amounts to destroying these resources. I think we would agree that the final answer doesn't lie in complete acceptance of either point of view, that we must retain these in their pristine state nor shall we sacrifice; but the pressure is there and I think we can say that no amount of effort, whether scientific in terms of research, technical, or whether managerial, can save this resource unless through successful political efforts its physical destruction can be prevented. And if we accept the fact that the value of many of the estuaries have been decreased by the addition of wastes, solid or liquid, and that the resulting reduced value should be increased by improving land or water quality then what values or what qualities shall we seek to establish and maintain as we move toward the management of this resource?

One approach is to say we think we can be guided in the level of restoration and the built up rate of quality should be guided by the willingness of potential benefits, public and private, to pay for the costs incurred. Our present inability to measure this demand for improvement and we have to acknowledge the fact that we can't measure quantity in terms of the value of a body of water for water skiing or for boating or for merely looking at it from your back porch -- our present inability to measure this demand for improvement is no reason for failing to initiate, without delay, turn the tide toward required restoration and upgrading.

The essential first step in this direction is agreement of all potential users on broad policy goals toward improving fault. I think a good many cases -- there are specific cases -- but this first step has not been reached; far from it.

Decisions on specific quality objectives which may require a good deal of discussion will become part of the subsequent task of resource allocation and environmental quality management. Decisions regarding the allocation of an estuarine resource among the various potential users should be based on a knowledge of the costs and benefits associated with the maintenance of various environmental land and water quality levels in that particular estuarine system. And the relationship and cost development for San Francisco Bay cannot be applied per se to the problems of Great South Bay or Delaware Bay.

The development of this knowledge requires prior information about all potential uses, including the introduction of waste materials and the ecological response of the estuarine environment to the various uses.

Could we close with this suggestion, which hopefully may lead to something that all of us are anxious to see? The successful management of an individual estuarine system was mentioned before. We have as an excellent example the study that was conducted in connection with Delaware, the study that was made on the Delaware Estuary, and here we have a very fine interaction between local interests, between State interests, Federal interests, but all based -- that is, the implementation of this report -- based on facts which in turn lead to knowledge and in turn lead to sound planning and recommendations.

The successful management of an individual estuarine system in this country today depends on, firstly, the passage of State and Federal legislation that recognizes and protects the public interest in this resource.

Secondly, the development under local leadership of a comprehensive long-range plan for managing the entire estuarine system to achieve objectives decided on by that planning group. And we have unanswered the question of the extent, the magnitude, the boundaries of an estuarine system. What about the continental shelf? The question or the fact that we need to produce increasing amounts of electricity which is placing tremendous burdens on the water resources of the country -- somebody has suggested why not locate these nuclear powered reactors on the continental shelf. This is an interesting suggestion. It would take the burden off some of our other valuable waters, of course, to the expense of these. But looking at all the benefits and the costs, this might be a wise move; but what effect would this have on the management of our entire estuarine system? We don't pretend to know, but we intend to find out.

Thirdly and lastly, once the long-range plan for management has been agreed on by the planning group, thirdly, implementation of this plan by special purpose local organizations, or perhaps an Estuary Commission that receives and responds to input from local, State and Federal sources as well as from private interests.

Recognition of this basic responsibility and this specific commitment have led to the formation of a Cornell University Water Resources and Marine Sciences Center, and more recently a Center for Environmental Quality Control. Cornell's contribution to the problem of preserving and protecting estuarine resources will be the sum of the efforts of individuals representing a wide spectrum of talents, coordinated through the Centers.

The fact that we cannot presently quantify the total value of an estuarine system as a combination of land and water resources with many potential uses neither lessens this value nor reduces the urgency for public action to save these truly irreplaceable resources. The proximity of estuaries to large metropolitan populations underlines the necessity for prompt legislative action. The continuing destruction of estuarine land and water serves further to emphasize the need to protect both the quality and the quantity of this resource against continuing assaults. At the same time that we move to stop damaging the quality of the estuarine environment, we must recognize the growing pressures on the quantity of our estuarine resources. No amount of effort, scientific, technical or managerial, can save this resource unless, through successful political efforts, its physical destruction can be prevented.

If we accept the fact that the value of many of our estuaries has been decreased by the addition of wastes, solid or liquid, and that the resulting reduced values should be increased by improving land and water quality, what values or what quality shall we seek to establish and maintain? The level of restoration of value or the degree of upgrading of quality should be guided by the willingness of potential beneficiaries public and private, to pay for the costs incurred. Our present inability to measure this demand for improvement is no reason for failing to initiate, without delay, the required restoration and upgrading. The essential first step is agreement among all the potential users on the broad policy goal of improving quality. Decisions on specific quality objectives become part of the task of resource allocation and environment quality management.

Decisions regarding the allocation of an estuarine resource among various potential uses should be based on a knowledge of the costs and benefits associated with the maintenance of various environmental, land and water, quality levels in that particular estuarine system. The development of this knowledge requires prior information about all potential uses, including the introduction of waste materials; the ecological response of the estuarine environment to the various uses.

Thank you.

MR. DE CAMP: You brought out quite plainly the need for this Federal, State and local cooperation, and I have to admit that I firmly agree with you.

Could you possibly expand on your idea of the role of the Federal Government in this cooperation a little bit for us, perhaps?

DR. GATES: Obviously any role or interrelationship among the local, Federal and State authorities has to be arrived at within the context of our present constitutional arrangement. On the other hand, it seems to me that we certainly have plenty of examples within our present constitutional arrangement which would permit us, perhaps, a special status for estuarine systems.

I suspect there are many interests that would react violently to this, but we do have, for example, in terms of our national seashores -- I am not sure of the name -- for example, up in Cape Cod it was established that some of the lands be set aside for a special purpose in mind-- and this might be going too far for estuaries on which there are so many competing demands -- but I am talking in favor of legislation which would establish a special status for these estuary waters.

Many people, you know -- and this may be going a bit far -- have decried the fact that in our country, in contrast to some other countries, the seashore in which the public has a very great interest has been carved up and is being used primarily by individuals in a very wasteful fashion as far as the public is concerned. I am talking about the possibility, and tremendous expense is involved, of moving toward acquisition, shall we say, by the Federal Government of the estuarine systems. I don't know whether that helps or not; it is not specific, but I am thinking of something outside of what we now have which seems to me to be within the possibility of Federal legislation if there is enough interest.

MR. GLENN: I noticed in your paper you said that the initial first step is agreement, particularly by users on the bulk policy for land quality. I think a lot can be done, but I am curious about this on quality of water which just has gone through, submitted to the Federal Government and has in the case of New York and New Jersey been approved. Maybe you don't agree with the present criteria that have been set forth, that have been agreed to by the Federal Government.

DR. GATES: This might be a leading question, Mr. Glenn, but I won't regard it that way; I will answer it straightforwardly.

I am not in a position, knowledge-wise, to agree or disagree. I would say though, that I am in agreement with the principle of the concept of national water quality standards; I can't say that I don't think anyone would want to say that I am in agreement completely with the manner in which these are being implemented. I think every one of us has certain reservations. We might have differences where certain standards are going to be set. So I am in agreement with this idea, but I don't think it is the last word.

I believe that hopefully, as with any criteria and any standards, these will have to be modified; and it may be, for example, that in connection with Estuary "X" that a set of standards will need to be developed for that estuary which may be, shall we say, unique as an estuary. So I am not quarrelling with the fact that these have been submitted, state by state; I am saying that we may have to go beyond that and modify that for particular estuarine systems.

MR. GLENN: I am sure that you have improvements, but I wonder if you agree that this is the first step.

Did you testify at the New York hearings on their criteria?

DR. GATES: No, I don't think I did.

MR. GLENN: I think that should be a more proper time to suggest whether it should be included. A lot of people have been talking about water quality and what should be done, and I am not going to argue whether you think it's being done quickly enough or enough force is being applied, but the thing is that we do have criteria and I think we are moving forward to get these plants built, and I think a lot of the statements sound as if we were just getting started.

Another thing I was a little surprised at, you suggested locating a nuclear plant out on the continental shelf. Don't you think this would cause pollution out there?

DR. GATES: Well, of course we get into the question of what we mean by pollution, the degree, the quality. But there is a possibility. I wasn't suggesting it; I was suggesting it as a possibility. I think it's worth considering. I must admit that I'm influenced by the fact that at the present time many of our larger inland lakes resemble the Finger Lakes which are being, as many of us feel, threatened by the possibility of one or another of the nuclear plants which might add sufficient amounts of heat to once again damage and change and very possibly damage the environment. So it seems to me a logical thing to say let's move them; it might be possible out there, but this is an interesting suggestion.

MR. GLENN: I am not suggesting that, because getting further away from your problem --

DR. GATES: I think in a way it has certain political advantages; if in nobody's backyard.

MR. GLENN: I don't want to put it somewhere else.

DR. GATES: My mention of this is based on the fact that the problem might be a more manageable one. I say we need to examine this.

I might go back to your comment about the standards. Yes, they have been passed. I mean they have been suggested by the State and an increasing number of them have been accepted; but I personally don't believe this is any more than the first step; setting up and establishing a standard is certainly necessary for a first step and we have moved a long way in that direction. Particular implementation is another thing, and I think we are waiting to see whether we talk about State level or Federal level the rate of which implementation is going to be achieved.

MR. GLENN: I agree with you.

DR. GATES: The more we talk the less we find disagreeable.

CHAIRMAN KLASHMAN: Thank you very much. I would like to call on Mr. Stanley P. Spisiak, New York State Conservation Council.

MR. SPISIAK: Thank you, Mr. Chairman.

Ladies and gentlemen, my name is Stanley P. Spisiak. I am representing the New York State Conservation Council, a group of roughly a half a million interested citizens who devote their time, effort and finances willingly, meaningfully, on behalf of the natural resources of the State of New York.

A formal presentation will be made by Mr. John Binner in the form of a written statement to be presented to the committee later. My remarks will be of a general nature based upon 30 years of experience and the matter which is before us at the present time. As I said before the New York State Conservation Council which I represent, has a great interest in this problem that is before us today. And let me say this: I am concerned somewhat by the fact that many people feel their own particular interest is an isolated case and present problems not akin to those to be found in other areas.

During the 30 years that I have been associated with water resources, water resources planning and water pollution control, I have had many opportunities to travel the width and breadth of this nation of ours. I am finding, as those who travel are finding, that this world of ours is beginning to get much smaller in more ways than one, and let us say just briefly if somewhat in an elementary vein, that while the earth's surface is three-quarters water, 97 to 98% of that water is not readily available in the way of fresh water. So that 2% to 3% of the fresh waters of the world are the waters with which we are concerned largely at the present time. For it is from these waters that the estuaries get their fresh waters.

We in the State of New York, and those in the Great Lakes area, have a great deal at stake. For we in the Great Lakes area have one-third of the entire fresh water supply of the world to be concerned with. When we take into consideration the fact that this largest body of fresh water is in a true sense in danger of becoming completely contaminated -- and the phrase "dying like Erie," which I coined 30 years ago, which is disputed in many instances by those who like to be heard -- and remember this, ladies and gentlemen, that those prophets of doom are usually not listened to as much as those who paint rosy pictures. And what has been wrong with our whole system is that we are giving too much credence to those who come forward with proposals and plans which they profess to have engineered and perfected, which will solve all of our problems.

I am here to tell you that we drink from a common cup in which we all have a mutual interest, for one man's sewage today is another man's drinking water tomorrow. We know this; we are finding this to be true. When we take into consideration that a body of water the size of Lake Erie is in a sense dead and dying, we have a great deal to be concerned with; for it is the water of the Great Lakes that finds its way down the barge canal system during the summertime, down the St. Lawrence River and into ocean waters. It is these waters that I am specifically mentioning for the very reason that they hold for us a prime example.

I would like to give you just a few specific instances of the type of water that is coming down these fresh water sewer pipes, for that is all they are becoming. There is very little question about this when you consider the fact that a small area such as the Niagara frontier, which is, after all, a western boundary of the State of New York in which I have a great deal of interest -- this area in itself provides daily over 40 tons of oil, over 1,000 tons of solid waste material, over one billion gallons of liquid effluent, containing cyanides and phenols, and acids of all kinds. When you take into consideration that this is coming down, which you refer to as the fresh water coming from the uplands, this is indeed something to be concerned with.

When we consider the fact that one industry on the Niagara frontier, a steel industry, discharges willfully each day in excess of 15-1/2 to

16 tons of oil seven days a week, and has been so doing for a great deal of time, it causes us to wonder. Having had the history that I have had, and background in this matter, I am more than concerned.

For if all that has been said here earlier today -- the grandiose plans and the wonderful statements about what the different departments and what different States are doing, the great programs that we have -- and we have a fine program in the State of New York, the Pure Water Program -- if we take into consideration all of man's efforts up to the present time, and put them into a scoreboard, since we are in a school, let us give ourselves a mark.

All I can tell you is that not only do we have a failing mark, but we have one to take great concern with for various reasons which I shall hope to outline in the allotted time that I have.

We are failing miserably to even hold our own pace. We are falling backwards, and this is accelerated rather than being slowed down, so much so that we have very little to cheer about, to look forward to, very little to take pride in, in passing on to coming generation. For we are not able to solve the problem that we present to ourselves in many instances which are important instances.

I point up now at this time that I am very grateful myself for the existence of the Federal Water Pollution Control Administration and its able personnel that do handle the matters that they have before them. While in the past many of our people in high government office, including the Presidency of the United States, have bartered for ballast the natural resources of our country, the awareness on the part of the public of these happenings is bringing about a more favorable climate. And I do feel that there is some hope in the future; however, this hope will be diminished if the type of actions that are taking place on the judicial level in this country continues and persists.

I am specifically mentioning one case; it may be an isolated case, but it is important. Matters pertaining to oil pollution has great concern for all of us for the very reason that while many of the effluents of particular industries dissipate while they are travelling the length of the miles they must travel before they reach the estuary waters, oil in itself does not dissipate. It may be broken up in particles, but that 16 tons of oil from one source; that 40 tons of oil from the Niagara frontier find themselves down to the estuary waters along the Atlantic coastline just as surely as all the thousands of tons that come from other sources such as Detroit, Chicago, Cleveland and other areas, because oil does not break up.

So we have a great deal of concern over these oil wastes which are finding their way into the estuary waters. There are many adequate laws in existence both on the Federal and State levels in various States, which have to do with the protection of our natural resources and our waters. I specifically cite the Rivers and Harbors Act in 1899, a law that was never really enforced until one isolated instance in the Niagara frontier area where a railroad which was accused by myself of having violated this law by the fact that, for a great number of years, they were daily discharging the cleaning from their diesel refueling stations at Gardenville. They were cited by the United States Attorney in the area on five counts taken over a period of five days. While this might have been for 5,000 counts, it was chosen to cite them for five points.

The importance of this case is that this matter was on the record and held in abeyance for the final solution for over one year. In the final instance, considering the fact that this was a pioneer case, if you will, because this was the first time in the history of the existence of that law that an indictment was secured, the Court saw fit to discharge the case and cite the fact that it felt that there had been sufficient punishment given by merely pinpointing this case, this company, and they suspended the sentence.

This type of treatment on the part of the Courts is an encouragement to industries that are seeking to violate the laws wilfully; it is a contravention of what we consider good practice, since there are many fine industries that are striving with all of their might to prevent this type of action. How do they feel when they find a company that has been wilfully and constantly ignoring the existing laws not only of men but of God -- how do they feel when they see the Courts discharge these cases this way? This is what I am concerned with, and I assure you that the actions on the part of the Federal Water Pollution Control Administration can be no better.

They can be no better than you and I, no more effective than you and I, the citizens of this great nation, will make them; for we are the government. We are the people. If we persist and continue to hide our heads like ostriches and only listen to those who come before us and paint glowing pictures of what will be in 1970 and 1980 and 1990 because it makes good listening, and applaud them because they are giving you something good to look forward to, I say to you right here and now to look in that mirror; look at the picture as it exists, for you may not have a second chance. It is now or never. It is now for us, and there may be no tomorrow; for while our nation has its eyes on the skies and the planets and beyond, we may be drowning in our own shrouds and our own swill at our feet. For we have not looked down and not taken a clear look at what the situation is.

We allow violation to continue. We encourage them; for every time that you do nothing about something that is wrong you are encouraging it.

I am encouraged by this young lady talking about our garbage dumps, by the young man from the union, by these people who take their time and come forward and present their stories as best as they are able. I am discouraged when I hear these glowing pictures painted in such beautiful rhetoric by some of the people; for it is the complacency that exists in our nation which is a situation into which we are being put by those people who are trying in many instances to justify the action of the organizations they represent and trying to make it seem that they are doing their jobs; they are doing their jobs to the point of selling the people on the idea that they are accomplishing that for which they have been appointed.

I say this here and now: up until now there was no reason for any existing agency to take any excess pride in their accomplishment, which has been minor in comparison to the need. The people cannot applaud that type of action; we must hold our applause for the time and the place when we can feel that the job is being done. Up until now it has not been, and I am sorry to have taken so much time to tell you so little. But believe me when I say I sincerely feel that unless we the people become aroused and speak our piece so that we are heard, we will have no future.

Thank you.

(Applause.)

CHAIRMAN KLASHMAN: I would like to now call on Mr. Jeff Endervelt who is the Legislative Assistant to Congressman John M. Murphy.

MR. ENDERVELT: Mr. Chairman, members of the Commission, on behalf of Congressman Murphy I would like to offer his regrets for not being here. The Gun Bill is before Congress and Mr. Murphy was forced to stay in Washington. We expect a vote on it late this afternoon. I am his Legislative Assistant, and he asked me to come down and make this presentation for him.

I am sorry I missed the beginning of this meeting, but getting from Washington to New York takes a little longer than it used to.

Thank you for this opportunity to appear before you today and participate in this public hearing to discuss the preservation and development of our nation's estuaries.

Throughout the history of our country, these areas have played an important role in our growth politically, economically and socially. In the early days of the Republic these waters were an endless source of food, supplying fin and shellfish. During the War for Independence these same areas served as battlefields, and provided the earliest connecting lifeline for the commerce of a young nation.

As our society progressed and industrialized, these areas provided the bases for our naval forces and the cooling water for the power plants of industry.

As we urbanized, they became a great source of recreational enjoyment, providing swimming, fishing and boating facilities. And in the wake of this recreational boom there evolved a thriving tourist industry.

An example of estuarine value can be seen from the now famous survey of Dade County, North Carolina:

	Millions of Dollars	Percent
Commercial Fishing	1.7	10.5
Tourist Industry	9.2	57.5
Federal and State Govt.	3.3	20.0
Social Security and Service Pension	1.4	8.6
Other	0.6	3.4

Here we see a direct relationship between estuarine value and a country's economic growth.

Esthetically these areas provide some of the magnificent natural beauty of our country. Within and along their borders can be found some of our great national monuments: the Statue of Liberty, Fort McHenry and Mount Vernon, just to mention a few.

I could go on naming the many other values of estuarine areas. They serve as a stopping off place for migratory wildlife and in some instances as the winter homes for these birds. The muskrat and the Key Deer live along their borders, and salmon pass through these waters on their way upstream to spawn.

These areas have given us, and offer us, great natural sources of profit and pleasure; but like so many of our natural resources we have failed to provide for their preservation and development, feeling that they were of infinite dimension and endless endurance. This mode of thinking has led to the tragic consequences we face today.

What was once a source for pleasure and profit has become a repository for filth and disease.

In my own 16th Congressional District, which takes in the Bensonhurst, Bay Ridge, Coney Island sections of Brooklyn and all of Staten Island, we not only feel the economic effects of this pollution but we see and smell its consequences.

Staten Island is surrounded by two large estuaries. On the north, the Kill Van Kull laps at our shoreline and on the south the mouth of the great Raritan Bay finds its home. These two great bodies of water that should offer Staten Islanders boundless economic opportunities and recreational enjoyment offer little but repulsive odors and sights.

The Kill Van Kull was once described as an area "well supplied with large beds of excellent oysters"; today in some stretches of this channel no marine life at all can survive, and along with Coney Island Creek in Brooklyn has been described as "possibly the most polluted waterway in the world".

Raritan Bay and Lower New York Bay have potentially the richest clam beds in the world; but since a 1960 hepatitis scare it is against the law to remove shellfish from these waters. A once thriving clam industry is almost dormant, with a loss to Staten Islanders running into millions of dollars -- and I might add a loss to clam lovers of some of the finest tasting clams in the world.

In 1964 the Verrazano-Narrows Bridge opened Staten Island's shores to thousands of New Yorkers; it gave them the opportunity to enjoy the miles and miles of beaches we have to offer -- almost. Almost, because most of the beaches on Staten Island are closed because of pollution. Tottenville Beach, Graham Beach and Oakwood Beach all "boast" No Swimming signs. Those few beaches that do allow bathing, like South Beach, can be enjoyed only if you don't mind the oil slicks, debris and pollution.

Coney Island, one of the world's great beaches, while not closed to the bathing public, is contaminated with pollution and debris.

These few examples that I have mentioned, affecting my own Congressional District, are unfortunately not the exception but the rule all around the country; whether it be in Florida, California or Massachusetts.

As serious as the problem of pollution is, it is not the only problem involved.

Reclamation has filled in almost one-third of the San Francisco Bay water area for real estate use; Tampa Bay in Florida has to a great extent become a housing project through reclamation and Boston's Back Bay has experienced the same problem. To many developers these land water areas are of no value unless they can be reclaimed from the sea.

Dredging is yet another serious threat to survival. In recent years dredging has been encroaching on the shellfish beds of Staten Island, causing considerable damage to some beds, destroying others and rendering still others useless for any future shellfish growth. Dredging also destroys much needed plant and bait feed for fish.

In other instances the effect of dredging operations has been to weaken natural shoaling protections and shorelines. The effect of this has been severe flooding in low-lying areas. The erosion of these areas also adds considerably to the water pollution problems.

The recreational opportunities and economic values of these waters have been all but destroyed.

The problems of dredging and reclamation are not easily overcome.

They involve competing economic interests. But by far the largest problem to overcome is that of pollution, and the largest source of pollution is the untreated or inadequately treated human wastes that are dumped directly into our waters. The entire Hudson River, from the Albany-Rensselaer area to the Narrows and the Lower New York Bay, receives the wastes of nearly ten million people. Over 40% of this waste is discharged directly into our waters without any treatment. This is equivalent to the wastes of four million people. 38% of the wastes receive primary treatment. Two-thirds of the waste material originates in New York; the other third in New Jersey.

Add to these figures the great amount of sewage that comes up the Raritan River from New Jersey and Staten Island, and you get some idea as to the magnitude of the problem.

When we realize that this is just the human waste, and we add to that the refuse of industry, agriculture and local governments, we begin to realize the magnitude of the problem. It doesn't take an expert on water pollution to know our waters are dangerously contaminated.

The second great contaminator of our waterways is industry. Throughout their history our great industries have discharged their wastes into our waters without a second thought, as though these waters existed for no other purpose than as an extension of their own province. The chemicals, wastes and oil discharges have all added to the net effect.

Local municipalities have not been more mindful of the potential danger. All too often they have discharged raw sewage into the waterways and it has taken, in most instances, abatement orders to get local governments to establish sewer treatment plants.

This vast pollution that we have described has a variety of effects: it depletes oxygen, kills marine life, creates health hazards and eventually destroys the value of our estuaries. Pollution, dredging, reclamation -- it would be inconceivable to think that any program to obtain the fullest public benefits could be accomplished individually. There is a definite need for the coordinated efforts of Federal, State and local governments, and public and private interests. These groups in turn must harmonize the various uses that the estuaries possess, the relationship between the waters and the adjacent lands, realizing the need for recreation, commerce, power and transportation.

Estuarine management for maximum benefit requires that these elements be controlled or managed so as to be in harmony with the demands placed on them. The value and potential of the estuary, nationally and locally, must be thoroughly examined.

It is an arduous, difficult and expensive task; but we have begun. The Federal Water Pollution Control Administration's conferences on pollution of the interstate waterways and the Raritan Bay was a beginning and has led to the planning and construction of sewage treatment plants along the Hudson River, New York City and Staten Island.

The Clean Water Restoration Act of 1966 was another important step, and authorized the National Estuarine Pollution Study, which this Commission is conducting.

I might add that I just found out this morning, and the House has passed today House Resolution #25, which came down from the Senate; it is on its way to the President's desk for signature. The Bill is one to preserve and to protect resources and make acceptable the estuaries; we are acting; but we have a long way to go. The work of this Commission is being followed closely, and we are all awaiting its report and recommendations, knowing truly the value of this.

The Clean Water Restoration Act of 1966 supplied the necessary funds to finance this study, and we are all awaiting the reports and recommendations of this Commission, as I said, knowing that they will be of immense value in solving this all-important problem.

For my part, I pledge to work in Congress for the necessary legislation to supply the resources needed to combat this tragedy, and offer my services in any other form that may be useful.

I wish this Commission luck and look forward to receiving your reports and recommendations.

Thank you.

CHAIRMAN KLASHMAN: The time is ten minutes past 12, and there are some of you who had indicated that you want to get on before lunch. I am afraid you will not be able to get on. However, I am going to call now on Mr. Walter S. Boardman, and following him will be Mr. Udell.

MR. BOARDMAN: Mr. Chairman, members of the panel, ladies and gentlemen, my name is Walter Boardman. I am a consultant on conservation and I am appearing here today as the representative of the National Parks Association, 1701 Eighteenth Street, N.W., Washington, D. C.

The National Parks Association is a private, non-profit, educational and scientific organization concerned primarily with the protection of the National Park System, but concerned also with comparable natural areas elsewhere and with the preservation of the natural environment generally. It publishes the monthly National Parks Magazine, which goes to all of its

39,000 members throughout the United States and abroad.

Hearings before Congressional committees, studies by competent agencies and an imposing array of statistical evidence all point to the great economic value of pollution-free natural estuaries. These places where the organically laden fresh waters from the land meet the mineral bearing shallow waters of the sea are, under sunlight, the richest food-producing areas of all the earth.

Likewise, there seems no contradiction to the studies which show the alarming rate at which these valuable areas are being destroyed forever, by dredging, filling and polluting. I might say parenthetically that in spite of our good work and all of the things that are happening, we are not even holding our own. We haven't started the upward swing toward control.

Since this meeting is concerned with New York and New Jersey, it is fitting to point out that in March, 1967, the U. S. Fish and Wildlife Service reported to Congress on the rate at which destruction is taking place in all States; this report shows that on the Eastern seaboard, New York ranked first, followed by New Jersey. On a nation-wide basis, these two States are exceeded only by California, which seems to be in a class by itself in this respect. This is from the U. S. Fish and Wildlife Service Tabulation, Page 46, hearings on estuarine areas, House Merchant Marine and Fisheries subcommittees on fisheries and wildlife conservation, March 6, 8, 9, 1967.

Since the need for protection of our estuaries is well established, the real question should be: why do we permit their destruction to continue? Even more to the point, how can it be stopped?

The immediate reason for the destruction of privately held estuarine lands is simply the financial profit in doing so. Under existing laws, the owner can dredge or fill as long as he does not interfere with navigation. Since navigation was the only public interest in such areas during the 19th century, it is easy to understand why navigation rights were spelled out without mention of the natural resource values which we now recognize as also vital, but which are excluded under the historical precedents based upon what was then seen to be the public concern. Consideration must now be given to legal procedures for the protection of the broader public interest required today.

It is idealistic to suggest that a new concept of land ownership is needed, wherein the freedom to use land would be inviolate so long as the natural resource values are protected. The conservation organizations have a very great responsibility in public education relative to land use ethics. Owner rights established in a pioneer age settlement must be revised to meet the demand of dense population and dwindling land resources of the present and future.

Even more serious is the general attitude of governmental units -- town, county, state and federal -- toward the resource values of wetlands and estuaries; such lands ought to be secure in public ownership. Unfortunately, we frequently find public agencies the most ruthless and shortsighted in management. Areas of great importance for their natural values are being used for solid waste disposal, roadways, airfields, unnecessary boating channels and parking lots. The Hempstead Town Lands are a classic example of the numerous destructive uses which have been employed by a municipal government.

Ironically, the wetlands of the Town of Hempstead are currently the subject of a study project of the Corps of Engineers. It is proposed that a massive system of dikes and floodgates be undertaken to control hurricane tides. It will, if carried out, negate the long, hard struggle conservationists have put up to protect these wetlands. Under Judge Krentzman's ruling the Corps has no obligation or even technical right to consider the resource values of the project.

While there can be some excuse found for hesitation in curbing the rights of the private land owner, there can be no excuse for the actions of the public official who ignores facts about land use while acting upon the basis of expediency. Efforts to modify the practices of local government by higher agencies are opposed on the basis of state's rights or home rule. While on the subject of rights, it should be pointed out that there is a wide gap between concept of "rights" and its corollary, "responsibility". Perhaps this is one of the basic weaknesses in the current social order. It is particularly significant that when the "right" of one city to pollute water infringes upon another's right to clean water, the first city has a responsibility to the second that should outweigh its claimed right to pollute.

In the larger sense, the whole matter of pollution control, along with other natural resource issues, will remain most difficult to correct until the great morass of bureaucratic muddle is cleared. Dr. Lionel A. Walford of the Sandy Hook Marine Laboratory has expressed the problem very effectively:

"At every level of government, Federal, State, County, Town, we find an incredibly rigid compartmentalization among the many agencies that have anything to do with the use of the environment, and often a fierce determination to retain the walls that separate them. This is sometimes true within agencies."

The above is from a paper at North American Wildlife and Natural Resources Conference in San Francisco.

The problem of the compartmentalizing of interest and responsibilities is bad enough in itself, but it does not stop there. Rather it reaches out to impede broad and much-needed legislation. The story of the crippling amendments to H.R. 25 under the present Congress is an excellent illustration. One of the reasons given for the introduction of the Bill was the inability of conservation interests to protect the marshes of the south shore of Long Island. In 1936 there were 30,000 acres of excellent wetlands with a history of shellfish and finfish production. In 1966 this had dwindled to 16,000 acres, largely because of the fierce resistance by the town supervisors to State partnership in a protective program made possible by New York State law. With the introduction of H.R. 25 the same local interests fought vigorously against Federal intervention, claiming their own capability to protect these wetlands even though the record of neglect was very clear.

Another source of opposition to the Bill came from supporters of the Corps of Engineers, who objected to the section which would have required the Corps to secure approval of the Secretary of the Interior when natural resources were involved. This was settled by a "Memorandum of Agreement" between the Corps and the Secretary of Interior whereby the Corps would consult with the Secretary. Now, by a decision of a U. S. District Court--Krentzman, March 14, 1968, re: Boca Ciega Bay -- it has been held that the Corps can deny only for navigational reasons as provided by the act of 1899. Yet this "Memorandum of Understanding" has been used as a reason for further weakening of H.R. 25.

This underscores the fact that the remaining wetlands, the delays of repeated studies, will still be in jeopardy until some authority is created that cuts across departmental and bureaucratic lines with power to intercede when the local government fails its responsibilities.

In conclusion, I would like to submit for the record of this hearing a statement in support of H.R. 25 presented before the House Subcommittee on Fisheries and Wildlife Conservation on March 8, 1967, by Mr. Anthony Wayne Smith, President and General Counsel of the National Parks Association.

Thank you for this opportunity to appear before you today.

May I commend this body for its excellent efforts to control pollution.

CHAIRMAN KLASHMAN: I now call on Mr. Harold Udell of Hempstead, Long Island.

MR. UDELL: Mr. Chairman, members of the panel, ladies and gentlemen, my name is Harold Udell. I am the Director of Conservation and Waterways in the Town of Hempstead, 880,000 people situated on the south shore of Nassau County, Long Island, encompassing the entire Hempstead Bay Estuary.

I appear here before you today on behalf of Ralph G. Caso, the Presiding Supervisor of the Town of Hempstead, who cannot appear because this is the bi-weekly Board Meeting today and it has taken up his time with business.

I would like to read a statement prepared by him which he would have presented at this meeting had he been able to attend.

"Gentlemen:

"I want to thank you for your kind invitation to appear here today. As you may know, the governing body of the Town of Hempstead on Long Island, for which I speak today, is entrusted with a heavy responsibility--that of protecting, maintaining and developing one of the most valuable stretches of tidal land and water in the United States, valuable both esthetically and ecologically.

"In profound appreciation of this trust and all that it means to present and future generations, the Hempstead Town Board has formulated, and is presently developing, a program of both conservation and recreation which is singular among municipalities in this nation.

"A component of this comprehensive development program is the maintenance of acceptability of pure water quality within this 12,000 acre marine complex.

"In my long experience as a Public Administrator I have attended countless hearings of this kind. I have never met a man who is for water pollution. But between the word and the deed lies that murky state of equivocation known as engineering economics. We all decry pollution, as we decry crime or sin. And while we bewail past desecrations, we continue to be hung up by the same penny economy. At staggering cost to the nation, we continue attempts to clean up the mess after the damage is done.

"Raritan Bay stands as an indictment. So does Boston Harbor and the Hudson River and Jamaica Bay and countless other interior waters.

"As an elected official of the Town of Hempstead and the County of Nassau, I should like to see my home area avoid the indiscretions which have been committed elsewhere.

"Let me explain.

"Nassau County has planned the construction of a sewage disposal plant to cost $36 million in the Seaford section of the Town of Hempstead. In the interests of so-called economy, the County is considering the discharge of treated waste from this facility into the Bay of waters of the Town of Hempstead. The present plan, as I understand it, calls for the piping of the effluent through the bay to Jones Inlet for discharge at that point. The waste material, I am told, will be discharged during outgoing tides to be washed out to sea.

"This, of course, is utter nonsense. It will be found almost impossible to discharge only during outgoing tides. What will happen, in reality, is that the effluent, because of the limited flushing action of the bay waters, will not be washed away. Instead, it will be swept back into the bay proper to spread its residues past Freeport, Baldwin and Oceanside through the length of the tidal complex.

"Say what you will about the treatment process, there is, at the present time, no foolproof way of producing a product which will not in time degrade the quality of our waters. What will occur, in actuality, is an irrevocable imbalance in the ecosystem--a reduction of desirable types of plant and animal life and an encouragement of the undesirable.

"Gentlemen, I wish to pose an alternative. And since the Federal Government will contribute monies to cover the greatest share of the cost of construction, it is fitting that I present this alternative to you today for your consideration.

"I suggest that the treated waste be pumped across the Bay to Jones

Beach, then piped across Jones Beach to be emptied into the Atlantic Ocean at a safe distance from shore. The distance involved would not be appreciably greater -- should, in fact, be almost equal to the distance from the Seaford plant to Jones Inlet. We are told this method would cost some $10 million more than issuance of the effluent into the Bay. This is highly doubtful, since a comprehensive cost analysis has never been done. I request that this body conduct such a study, in view of its importance not only to the local area but to the entire nation, so that we have the specifics on which to make a sound judgment. Let's have the figures so we know what we're talking about. And, for purposes of today's discussion, even if we assume the method does prove more costly, what are we measuring this cost against?

"Who can put a dollar value on the wetlands?

"Who can put a figure on esthetics or pleasure?

"What is the monetary value of pure water to the fisherman, the clam digger or swimmer or boatman?

"What is the dollar worth of two and a half tons of food per acre of Hempstead marshland which sustains the small forms of marine animal life?

"How are you going to weigh this against the six or eight or ten million dollars in question?

"And how does one compare this $10 million figure to the cost of cleaning up the pollution after the fact? What is the cost of rehabilitating the Hudson River? What would it cost to clean up the Potomac?

"Closer to home, for a perfect example of overfertilization produced by the nitrate and phosphate content of Bay waters, we can point to Oyster

Bay which is choking in eel grass.

"Unless we go to tertiary treatment, we can predict the same result with certainty -- and tertiary treatment is precluded by prohibitive costs.

"In addition, there comes the day when the sewage disposal plant has mechanical trouble and raw sewage is discharged. All protesting to the contrary, this must ultimately happen.

"The fact is that certain shellfish areas in the Town of Hempstead have already been closed to public use due to pollution caused by the treated waters discharged from treatment plants in Bay Park and Long Beach.

"All of this becomes ludicrous in the light of my own personal experience as a government administrator.

"The pollution caused by sportsmen's cottages situated in our channels, which by comparison is infinitesimal, has been standard political fodder during local election campaigns. On the recommendation of the Town's Director of Conservation and Waterways, Mr. Harold Udell, in January of this year the Town Board acted to phase out these small weekend houses by 1977. The newspapers at the time said we were ringing down the curtain on a beautiful era in which a man could live on the water and enjoy its beauty and solitude in peace. These homes were leased from the Town from generation to generation within the same family. Nevertheless, in the interest of the general good, the action had to be taken and we hope, through attrition, that a number of leases for these structures on Town-owned land will be terminated long before the cut-off date.

"I recall, too, the intensity of a popular feeling a few years back to preserve the wetlands. I hope the same degree of public pressure will support my present stand.

"The eradication of the Bay houses is a very small fraction of what we've done in the interests of water quality control. We also have a hand in proposed legislation controlling sewage from the 30,000 pleasure boats which ply our waters. Another aspect of the Town program involves daily water sampling and analysis. All waters in the area of sewage outfall lines are constantly checked.

"The New York State Water Resources Commission has assigned an SA classification to the waters in question. This, of course, is the highest quality designation and we are doing everything within our power to retain that classification.

"Mr. Udell is presently conducting a study, together with the State Conservation Department and the County Health Department, to measure the degree to which treated waste has degraded our estuaries for recreational use. This document will then become the basis for a decision on the means by which effluent from the Seaford plant should be discharged. At the completion of this report, I shall submit a formal recommendation to the Nassau County Board of Supervisors reiterating today's recommendation.

"Meanwhile, I must stress that we are contemplating the expenditure of millions to build a plant to turn our magnificent wetlands into a waste-receiving basin.

"In two generations, gentlemen, we will have despoiled a biological entity and a place of beauty which has stood inviolate since the creation through eons of glacial movement.

"I look forward to hearing from this agency in support of my position in the matter I've discussed with you today, and particularly in the possibility of conducting the study I've requested.

"Thank you very much."

CHAIRMAN KLASHMAN: Thank you very much. Are there any questions? I would like to now call on Mrs. Claire Stern.

MRS. STERN: Gentlemen, members of the audience, my name is Mrs. Claire Stern.

VOICE: I can't hear you. Speak louder into the microphone.

MRS. STERN: My name is Mrs. Claire Stern and I appear here in my capacity as Administrative Assistant of the Nassau County Planning Commission, presently on leave as a candidate for the New York State Assembly from the 18th Assembly District. My responsibilities for the County Planning Commission included, among others, conservation, environmental health, and their relation to land use planning. As a member of the staff, I represented the Department on the Regional Marine Resources Council, a committee of the Nassau-Suffolk Regional Planning Board. I was designated by the County Executive Eugene H. Nickerson as his representative to the Water Pollution Subcommittee of the Metropolitan Regional Council.

In today's statement I shall be brief, and shall limit myself to setting forth some of the water resources problems in my district. These are the same problems which exist in other parts of our country, and solutions we seek here may be applicable elsewhere.

My district encompasses the communities of Great Neck, Manhasset, Roslyn and Port Washington, and is bordered by the Long Island Sound, the waters of Little Neck Bay, Manhasset Bay and Hempstead Harbor. These magnificent waters are a treasure we have mistreated to the extent that we now have only limited use of them for recreation. They are polluted.

They are hidden from view by private ownership. For example, Manhasset Bay and Little Neck Bay can be admired from an automobile traveling at 40-50 miles per hour, or from a private boat out in Long Island Sound.

We have two small areas of wetlands and salt marsh which are also being threatened by development. The valuable time and money which is being expended in the effort to preserve Mitchell Creek in Great Neck could be prevented, or at least diminished, if the national study by the United States Department of the Interior were completed. Time is of the essence. Must we continue to hear the residents say, "This is the size of oyster we used to find in this channel", as I was told only this week?

Waters that could have been used by everyone have been closed to bathing for years. In a community which boasts approximately 29 miles of shoreline I find the proliferation of private and public chlorinated swimming pools a sorry example of progress.

Why are we prevented from the full use of these bays? Little Neck Bay continues to receive sewage from New York City, mostly the overflow from the combination storm and sewer drains, as well as some untreated sewage.

Manhasset Bay seems to suffer because of the currents which carry some of this same sewage from New York City. Studies by the Nassau County Department of Health are inconclusive, but suggest that additional pollution is the result of belated controls on waste from the many boats in the Bay.

Hempstead Harbor apparently has a more effective circulation which allows more swimming areas, although there is a problem of industrial waste in the southerly part of the Bay.

The reclaiming of these waters is possible and necessary. What is required is a combination of technical knowledge, much of which we have at our disposal, and a community understanding of the ecosystem. But most of all I believe it is possible to achieve by a setting of priorities -- the proper allocation of public funds to reverse this destructiveness.

At the very moment we are directing our attention to the known sources of water pollution, we are encouraging a new potential source of water damage, which may be irreversible. I speak of the potential danger of thermal pollution. I have been told that I should refer rather to "thermal effects", since present research does not prove conclusively that the effluent from nuclear power plants is a pollutant. While research is proceeding slowly, approval for new shoreline sites for nuclear power plants is being given by the Atomic Energy Commission. Once again we see our technical expertise put to work in the name of progress, creating a gap which we may never be able to close. We may be trading off a reduction in air pollution for a new kind of water pollution about which we know rather too little. Some body of scientific knowledge is available to us today through pure research already undertaken, and careful monitoring by existing plants. What we do not know is what the cumulative effect will be when the Long Island Sound is ringed by five or six plants, each one individually considered safe by known standards. Have we studied the tidal flow of the Atlantic Ocean and the Sound to determine if nuclear power plants in other locations along the northeastern seaboard will join together to create a radioactive hazard?

We must not attempt to stifle the best, most efficient and economical method of providing power for our growing population. I ask: Is a multiplicity of nuclear plants the answer? Who will make that determination since the Atomic Energy Commission does not consider thermal pollution in approving a license?

We need an interstate agency with sufficient authority to deal with this dangerous threat to our waters. We need not create a new agency for just that purpose. We already have several regional bodies whose authority could be expanded to include the Long Island Sound. That authority should compliment the Atomic Energy Commission's concern with the public need for power by its own concern for the public need for the preservation of our water resources and its irreplaceable marine life.

Thank you for the opportunity to appear before you today.

CHAIRMAN KLASHMAN: I shall adjourn the meeting and we will reconvene. It is now a quarter of one; we will reassemble in one hour, a quarter of two. I understand there are restaurants around First and Second Avenues and you may have your choice. Are there any questions?

(Whereupon, at 12:45 p.m., the within meeting was adjourned; reconvened at 2 p.m.)

CHAIRMAN KLASHMAN: I now call on Miss Jean Faust, Research Assistant to Congressman William F. Ryan.

MISS FAUST: This is the statement of Congressman William F. Ryan:

"As a member of the House Committee on Interior and Insular Affairs, I am extremely aware of the value of preserving our natural resources. Prominent among these are our rivers, which provide benefits ranging from supplying water and removing wastes to the economic investments in shipping, and all the secondary employment which that industry supports.

"My district, the 20th Congressional District of New York City, encompasses the Upper West Side of Manhattan. Many of my constituents have a direct interest in the dangers and problems of water pollution as they live along the Hudson River, which provides the western boundary for my district.

"This great river is one of the most beautiful rivers in the world. Its splendor and majesty have been extolled by explorers, painters and poets. Yet, through neglect and lack of planning, we have allowed this priceless natural resource to become one of the most polluted rivers in the world, its filth lamented by citizens, conservationists and public officials. The high level of pollution of this famed waterway is a national disgrace.

"Action to reduce pollution in the Hudson is urgently needed. However, the project proposed for the upper West Side -- the North River Water Pollution Control Project -- would not only be a blight and an insult to a racially and economically integrated residential area, it would fail to reduce pollution as required by State and Federal Standards.

"My objections to this project have been detailed in many letters and statements to Secretary Udall, Governor Rockefeller, Mayor Lindsay and the Board of Estimate of the City of New York.

"The most serious objection is that the proposed plant -- in both design and performance standard as projected by engineering studies made for the New York City Department of Public Works -- does not meet State and Federal standards for water quality.

"The Hudson River Enforcement Conference of September, 1967, recommended that all wastes must be treated to provide a minimum of 80% reduction of biochemical oxygen demand at all times and stated that design for

90% BOD removal would be required to meet this standard.

"Standards submitted by New York State and approved by the Secretary of the Interior on August 7, 1967, require secondary treatment of municipal waste as a minimum. Secondary treatment is defined as a process which removes BOD in the range of 75 to 95%.

"A process design analysis and an evaluation of the effect of the plant on pollution abatement were made in February, 1967, for the New York State Department of Public Works by Quirk, Lawler and Matusky, Engineers. This report makes the point several times that BOD removal at this plant would range between 50 and 55%.

"An attempt has been made to justify the granting of federal funds for this project on the basis that New York City plans at some time in the future to make additions to the plant that will bring performance up to standard. However, no specific plans or blueprints have been submitted. The only reference made by Quirk, Lawler, Matusky to expansion of facilities would bring BOD removal up to only 65%.

"Although inadequate for the purpose of improving water quality to prescribed standards, this project would create another kind of pollution: destruction of the scenic beauty of the river. Public Law 89-605, which created the Hudson River Basin Compact, was intended to promote restoration of the Hudson. The intent of this law would be violated if we allow the construction of 22 acres of white concrete, extending eight city blocks along the river bank and 500 feet into the river itself. Even worse, the towering fountains and sludge tanks, rising over 200 feet vertically, would destroy the restful horizontal vista of the river view.

"I cite this proposed project as an example of the inadequacy of the measures being taken to meet the danger and blight of pollution of our waterways.

"Strict enforcement of existing laws designed to control water pollution would be a constructive step in the restoration and preservation of our water resources. We cannot be content with halfway measures.

"An informed and concerned public, which will demand of their government a vigilant protection of our water and scenic resources, is our strongest ally in fighting pollution.

"I commend the Federal Water Pollution Control Administration for arranging this conference to allow for the participation of the public in this vital struggle.

"Thank you."

CHAIRMAN KLASHMAN: I would like to call on Mr. David Wallace, New York State Conservation.

Ladies and gentlemen, we want to try to get out of here this afternoon and we want to keep the time down to ten minutes. So in your statement you can submit the entire statement for the record and try to cut it down in speaking.

I now call on Mr. David H. Wallace, New York State Conservation Department.

MR. WALLACE: I think my statement will take more than ten minutes.

CHAIRMAN KLASHMAN: So why don't you submit your statement as part of the record, and I will have it included.

MR. WALLACE: I will include my remarks as to a couple of the items in addition to the statement which has been already placed in the hands of the panel. I have a couple of charts, one of which I would like to discuss.

MR. PIRONE: Mr. Chairman, I very much object to limiting Mr. Wallace. He's Director of Marine Fisheries for the State. He probably has more information than everybody here put together, and I request that we hear his full remarks.

CHAIRMAN KLASHMAN: Your remarks will be noted if you identify yourself.

MR. PIRONE: Dominick Pirone, Hudson River Fisherman's Association.

CHAIRMAN KLASHMAN: Mr. Pirone, we will be happy to give you a copy.

MR. PIRONE: I sincerely object, after having heard all the politicians at full length, and then not let a scientist speak.

CHAIRMAN KLASHMAN: Your objection will be noted. Thank you.

MR. WALLACE: For the record, my name is David H. Wallace. I am Deputy Director of Fish and Game for the Marine Region of the New York State Conservation Department. Our Department is charged with the general responsibility to develop programs for the efficient management of fish and game resources of the State. The law under which we operate also requires that we take into consideration the environment to the extent that it constitutes the habitat for fish and wildlife.

Therefore, in any consideration of our coastal resources, the condition of the environment as a suitable habitat for our fish, shellfish or wildlife is of direct concern to our agency.

Our agency carries on a water quality survey in the marine and estuarine environment to determine the suitability of this environment for fish and shellfish. As part of the regulatory program, the measurements of coliforms in the water, pesticides and in some cases nitrates and phosphates are used as a guide for determination as to the areas which are suitable for the taking of shellfish which are to be consumed.

I have a chart here, Mr. Chairman, which indicates the areas which are currently restricted for the taking of the shellfish in our marine waters. As a result of coliforms, it is higher than the safe level as prescribed by the United States Public Health Service, and I would like to submit that.

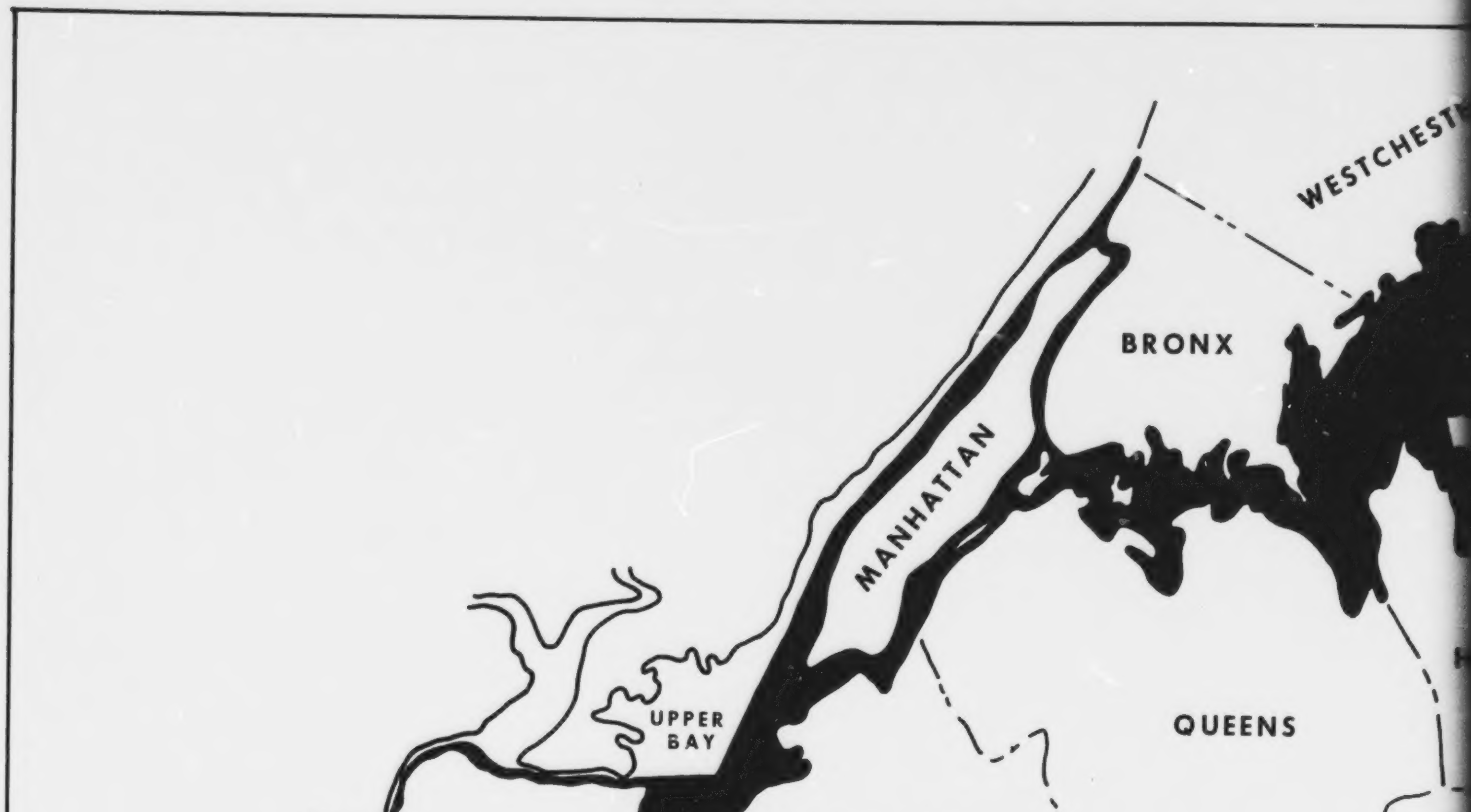
CHAIRMAN KLASHMAN: That will be submitted for the record. I note that the map is in color -- you will provide us with copies at the time?

MR. WALLACE: Yes. As part of this chart which I am submitting, I would like to point out a few statistics dealing with this particular matter.

In our marine waters we have at the moment some 172,000 acres which are restricted for the harvesting of shellfish because of poor water quality. Besides this, we have some 4,000 acres beyond this which are restricted for the taking of shellfish during the period when we provide recreational boating when it is at its peak, because of the contamination from that source. This is out of a total of 750,000 acres which are presumed to be suitable for the purpose of production of shellfish in New York.

Surveys have shown that in these restricted areas we have at least in excess of three million bushels of one species of shellfish, the hard clam, and the inability of our industries to harvest these shellfish results in an annual loss to the State and to the industry in excess of $2 million.

All of the waters in and around New York City are closed, including the western part of Long Island Sound, as you can see on the chart. Around New York City, of course, are the main sources of pollution; sewage and industrial effluents appear. As someone said here this morning, prior to 1960 a small part of Raritan Bay was open for the taking of shellfish.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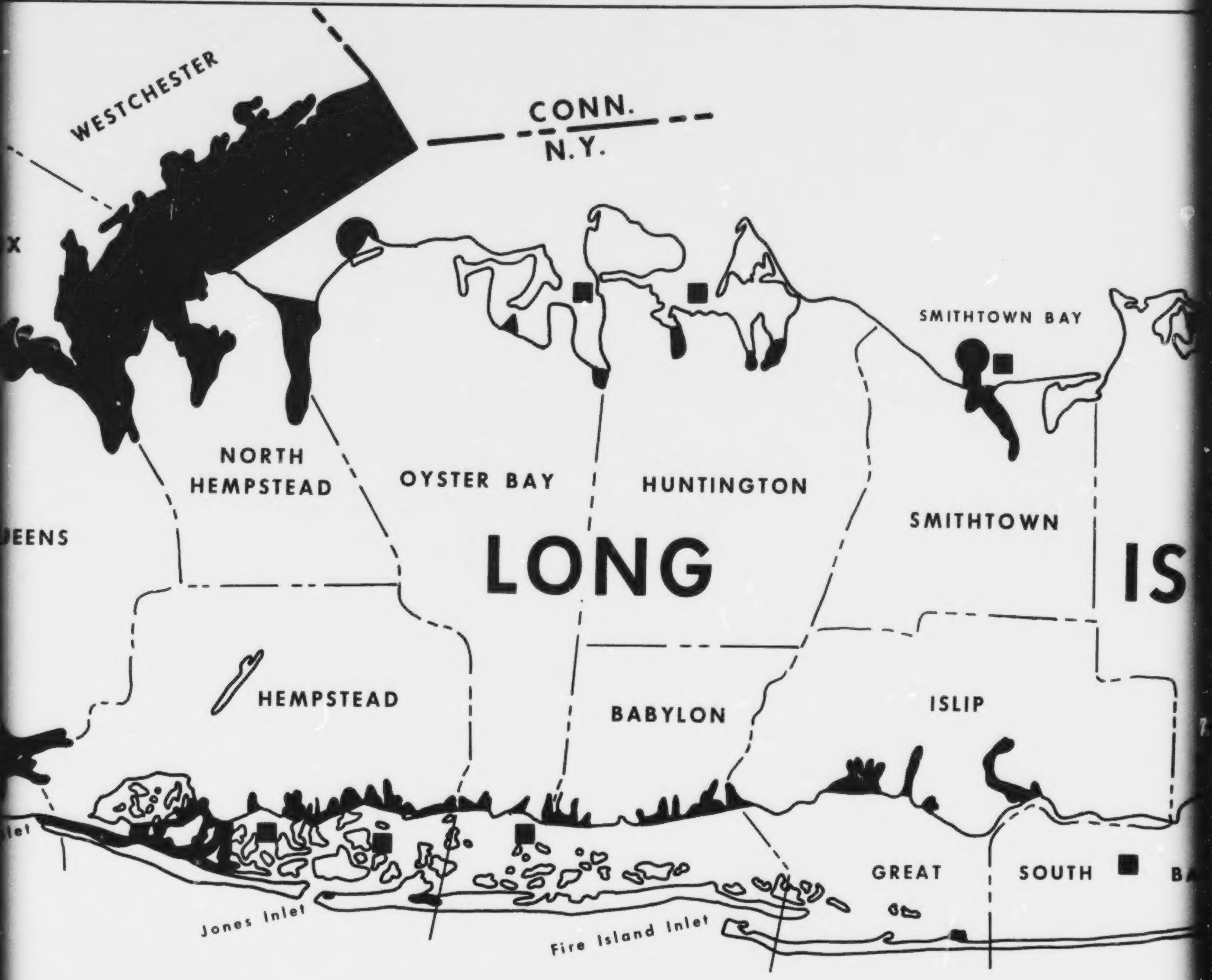
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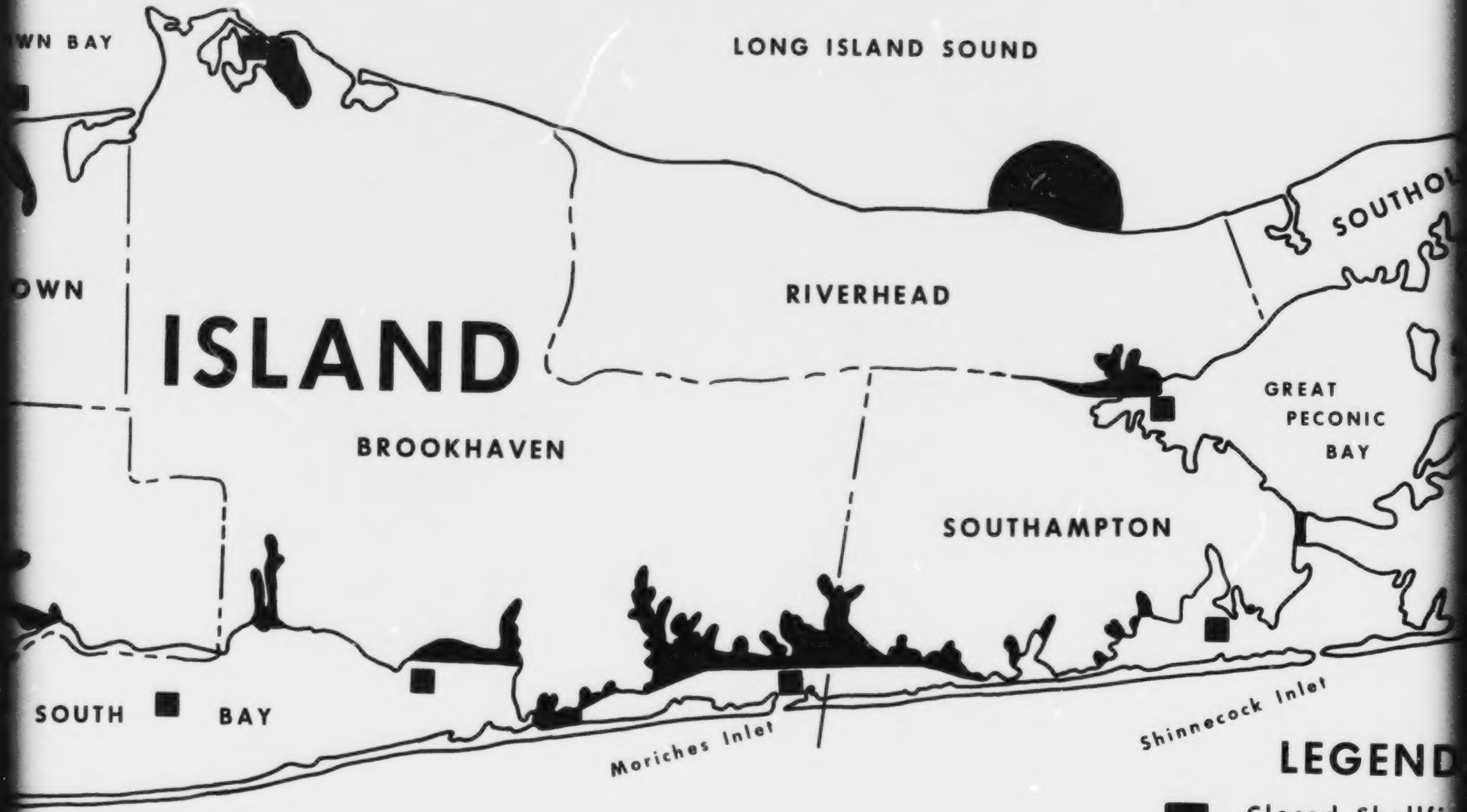

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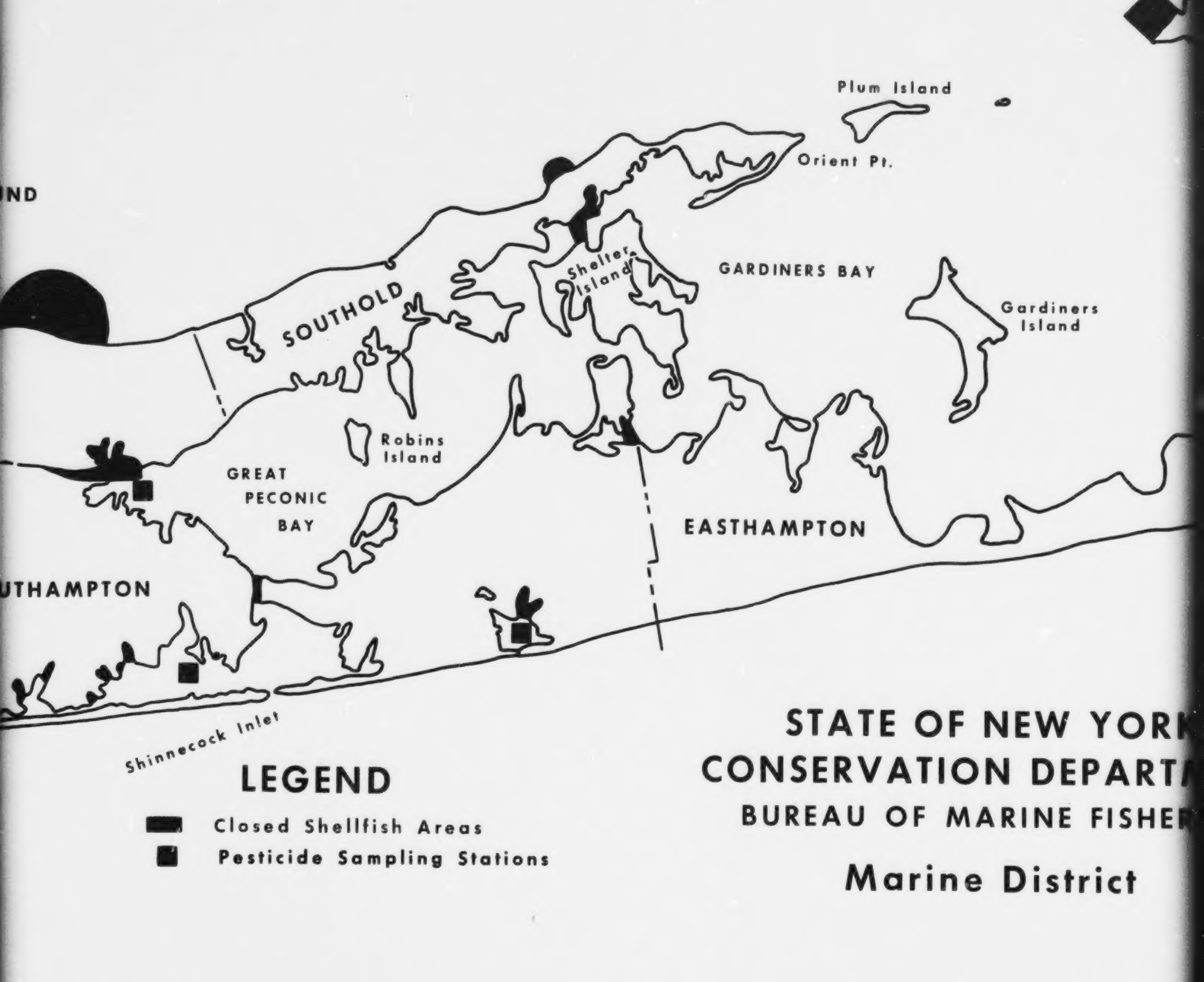

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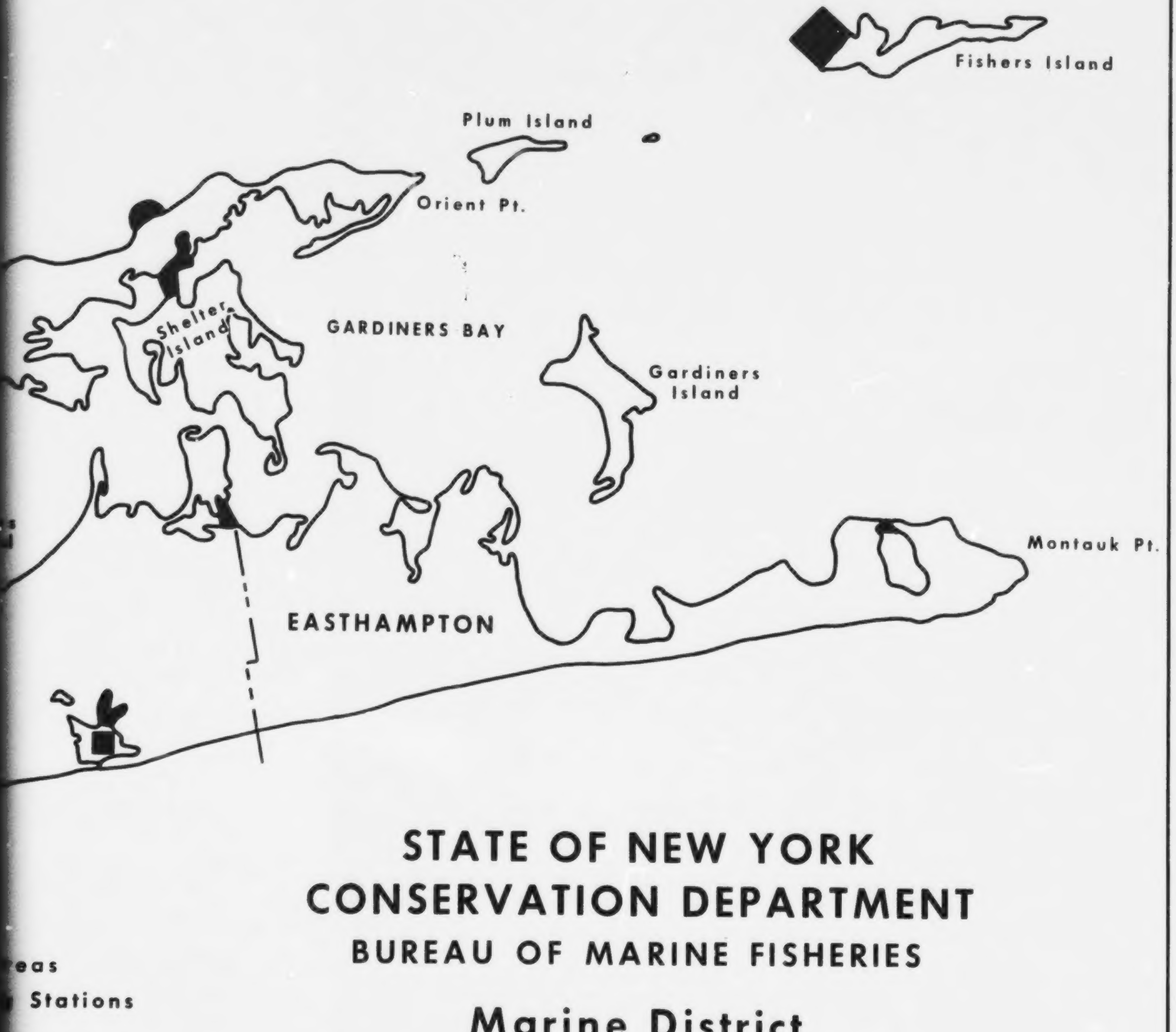

STATE OF NEW YORK
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This has been closed since 1961 because of the questionable water quality that exists in that area.

I wouldn't attempt to go into all of the things that have created these conditions. I think it is perfectly apparent to all of the panelists and to most of the people present here. I think one of the real problems that our marine resources have to live with is the lack of planning for their best use and development.

As all of you know, our estuaries are used in many different ways; they are used for commercial and recreational fishing, shellfishing, water fowl hunting, swimming, boating, sources of sand for private and public works projects, as highways for boat traffic of all kinds, and all too frequently from the standpoint of ecologists interested in the wildlife population living in these parts, as a place to dispose of all kinds of refuse and waste.

An urgent need, as we see it, and one which bears upon the purpose of this meeting, is to develop long-term plans to be used in these estuaries for the greatest public benefit, and hopefully with the widest variety of uses. Many citizens and public officials on Long Island are extremely fearful of the situation that we face today. The lack of planning in Great South Bay, for example, is potentially going to destroy the recreational values of this body of water; or so alter it as to render it useless for fish, shellfish and water fowl, and create an effect that could make living almost uninhabitable along the shore.

I am talking about the problem of eutrophication and the excessive nutrients in the environment. Already Great South Bay over the past 15 years has had several periods when, because of these excessive nutrients, excessive growths of algae rendered the shellfish unusable, in many cases killed them. In many cases made the body of water unusable for many purposes.

Appropriate regional planning has not yet been developed here in New York for estuary resources. And I feel that the need is urgent. In the interim I think that this agency and all other agencies of government, including local agencies as well as the Federal Government, must greatly accelerate their research programs so that factual data will be available to which we can make the kinds of decisions that you face when you are trying to evaluate what is the best way to use one of these important bodies of water.

We are extremely concerned about this eutrophication because on the Great South Bay and on the South Shore of Long Island the water exchange time is very long, and the interchange of water in the sea holds nutrients in such a way as to make it easy for the tremendous blooms of algae and other aquatic plants which disturb and completely change the cleaning to do their work.

Now biologists know the conservation values of our estuaries but we are hard put to assign a dollar value on them; and I believe that that was one of the questions that was raised in the invitation to appear here. However, at least in terms of fish and shellfish, we know something about the end results of these estuaries.

In our marine waters, for instance, we have about one million sportsmen enjoying fishing for striped bass, porgies, flounder, fluke and bluefish and other species. And I am not talking merely about the Hudson River which already has been covered in several areas here; I think these remarks would be equally appropriate there.

Our sportsmen contribute to the economy, to our estuaries and marine areas something like $75 million a year. In 1970, if the sportsmen continue to increase at their present rate, we will have one million and a half people hopefully wanting to enjoy this type of recreation. We also have a small army of people taking shellfish for recreational purposes, and these numbers are in excess of 100,000 a year. And while it is difficult to put a dollar value on this, it makes a great contribution to the local economy.

Our commercial fisheries in the marine areas are worth at the point of landing about $12 million. This is divided between fin fish and shellfish. This supports some 5,000 people who are engaged in the harvesting of these resources.

Now I am not claiming all of the fish and shellfish owe their origin or existence to the estuaries. But most of our species spend some part of their lives in the estuaries, and are influenced in some way by the wetlands associated with the estuaries. We like to think of the estuaries as a community providing food and shelter for a variety of organisms. The primary producer, or the plants, manufacture food from the water and minerals with the sun's energy. This food is used by a host of small animals which are in turn eaten by our fish and shellfish. If we lose our wetlands through neglect, pollution, filling and dredging, we sort of immediately close down the factory that supports the estuarine communities.

It is not difficult to visualize the eventual efforts on our harvestable finfish and shellfish resources.

In the announcement of this meeting, the question was raised concerning the respective roles of the local, State and Federal governments in managing our coastal waters. I would like to think of this problem as one in which it is the responsibility of all of our citizens to participate in this effort; it certainly is of importance to the public. It is of importance to local government. The State government has basic responsibilities by law, because of the ownership of the underwater lands in some cases, or the waters, and the fish and wildlife that live in it.

We have developed a technique of cooperative government here on Long Island, particularly in attempting to manage our wetlands, and the State of New York has entered into cooperative agreements with various ties to protect our wetlands. As a result of this we have some 15,000 acres of wetlands under this cooperative agreement. It seems to me that indicates some vehicle or technique by which the State and Federal government could enter into a partnership to bring all of their multiple resources to bear in solving this problem of preserving our estuaries in such a way that they will be the wonderful great bodies of water that they are.

The Conservation Law of the State of New York charges the Conservation Department with the general responsibility to develop programs for the efficient management of the fish and wildlife resources of the State. The law further specifies that such resources shall include the water environment to the extent that it constitutes the habitat of fish and wildlife. Therefore, in any consideration of our coastal resources, the condition of the environment as a suitable habitat for our fish, shellfish or wild waterfowl is of direct concern to this agency. In addition to the general responsibilities mentioned here, specific legislation has been adopted to deal with the preservation of our marine wetlands and underwater lands. These laws include the Long Island Wetlands Act covering specifically the wetlands in our marine waters and the Stream Protection Act, which controls the changes which can be made in our underwater lands and waters.

While the classification of our marine waters is controlled through the State Health Department and the Water Resources Commission, the water quality of our coastal waters is of direct interest and of vital importance to the Conservation Department, since our shellfish, fish and wildlife are affected directly by the environment in which they live.

Water quality surveys in the marine and estuarine environment are carried on continuously by this agency. These studies include measurements of certain physical and chemical components of the marine environment as well as the level of contamination by fecal coliforms, pesticides in key areas, and nitrates and phosphates where these factors bear on the ability of fish, and wildlife to grow and develop. Areas open for the direct harvesting of shellfish are delineated on the basis of the results of these studies, and others which are made from time to time by the State and Federal agencies. The standards of water quality, which determine the areas open for the taking of shellfish, have been established by the U. S. Public Health Service as part of the National Shellfish Certification Program. In New York waters at the present time, based on these standards and our studies, some 1,017,000 acres are open for direct harvesting of shellfish, 4,000 acres are seasonally open, and 172,000 acres are restricted against harvesting for market. The open area figure is somewhat misleading since it includes about 300,000 acres of Long Island Sound within the boundaries of this State which are unsuitable for shellfish production because of physical characteristics of depth, etc.

Surveys have shown that over 3,000,000 bushels of hard clams exist in the restricted areas. Inability to use directly these shellfish results in an annual loss between $1.5 and $2.0 million. All the waters in and around New York City are closed, including western Long Island Sound. Around New York City, the main sources of pollution are sewage and industrial effluents. Duck farms are the largest single current source of pollution on eastern Long Island.

Substantial improvements in water quality can be expected soon in the bays and tributaries on which duck farms are located, as the result of the enforcement orders of the N.Y.S. Health Department supported and backed by the Federal Water Pollution Control Administration. The Long Island Sound waters adjacent to Westchester County should improve rapidly with complete sewerage systems in the county. We anticipate that an area as much as 20 square miles will be open for direct shellfish production within the next year or so as a direct result of these improvements. These areas have been closed for over 40 years.

There are other bright spots in the efforts to preserve our estuaries as a suitable environment for fish and wildlife. The wholesale destruction of our wetlands by filling with sand from our bay bottoms, which in turn are destroyed as productive areas by the dredging, is being reduced rapidly. Within the last five years some 15,500 acres of wetlands owned by local governments have been dedicated for conservation purposes through cooperative agreements with this Department. More agreements are being negotiated now. However, vast wetlands, particularly in the Bays of Eastern Long Island, are still under private ownership and may succumb to real estate developers unless more rigorous controls can be developed by government agencies.

Our marine waters and underwater lands still suffer from lack of planning for their best use and development. Our estuaries and coastal waters are used in many ways. They are used for commercial and recreational fishing, shellfishing, waterfowl hunting, swimming, boating, as sources of sand for many private and public works projects, as highways for commercial boat traffic and all too frequently as a place to dispose of all kinds of refuse and waste. An urgent need is to develop long-term plans to use these bays for the greatest public benefits and hopefully with the widest variety of uses. For example, many citizens and public officials are fearful that lack of planning in Great South Bay could destroy the recreational values of this great body of water, so alter it as to render it useless for fish, shellfish and waterfowl, and create effects which would make living undesirable along its shores.

The appropriate regional planning body has not yet been created in New York for marine resources planning, but the need is urgent. In the interim, this Department has been accelerating its environmental research, so that basic studies will be under way and in many areas factual data will be available on which to develop the appropriate plans to accommodate to the many needs of our people. Planning for compatible multiple use of all resources has already been initiated by the Water Resources Commission for Raritan Bay under the permit provisions of the Stream Protection Act. Areas have been designated for mining of sand and gravel, for further channel development, for the protection of fish, shellfish and wildlife values, and for reduction of shore erosion. Alterations in the bottom contours from the sand and gravel dredging are being gradually controlled so that deep pockets unconnected with channels will be eliminated. It is anticipated that these control steps will avoid further aggravating of the pollution which exists there.

One source of pollution of potential danger to the estuarine environment is the continuous release of nitrates and phosphates in effluents from sewage disposal plants, leaching from septic systems, and the sewage effluents, either treated or untreated, from commercial or private boats. In bays and tributaries where the retention time of water is long because of limited tidal flows, the danger of eutrophication, with the disastrous side effects which go with it, is a serious problem which has not been solved. Excessive growths of algae have already occurred in certain bays along our south shore. Unless the excess nutrients can be prevented from entering these shallow, low-flow bays, we can expect noxious algae blooms, fish and shellfish kills, and beaches rendered unfit for bathing.

The question is constantly posed to us, "What is the value of our estuaries or wetlands?" In a recently-published advertising brochure, a Long Island town presented an impressive array of data describing its population, industrial complexes, net worth and retail sales. Dollar values were assigned to some of these figures. The brochure also described the coastal wetlands of the town -- the marshes and the broad salt-meadows at the mouths of rivers -- and told how the wetlands were being preserved for their conservation value. But no dollar values were assigned to the wetlands.

Biologists know the conservation values of our estuaries and are hard put to assign a dollar value to them. However, we know that much of the commercial and sport catch of fish and shellfish is dependent upon the very existence of the estuaries and the man-made changes taking place within them.

In New York's marine waters an estimated one million sportfishermen enjoy fishing for striped bass, porgies, flounders, fluke and bluefish and other marine and anadromous species. These fishermen contribute approximately $75 million to the economy of the coastal area each year. By 1970 the number of sportfishermen is expected to reach 1.5 million, with a proportionate increase in the money they spend here. We have a small army of people who harvest shellfish for their own use. This group totals in excess of 100,000 persons and is growing rapidly. Almost every good day they can be seen out gathering a mess of clams, mussels, crabs or lobsters and, in season, scallops. And we know they contribute to the local economy.

A little farther offshore, the commercial fin-fishermen harvest flounders, porgy and other fishes for a total catch in 1966 of 134 million pounds worth $3.5 million to the local economy at the point of landing. Similarly, the commercial shellfish catch, mostly clams, in 1966 amounted to 14 million pounds worth $9 million. About 5,000 fishermen are actively employed in harvesting these marine resources.

We are not claiming that all of these fish and shellfish owe their origin or existence to our estuaries. But many of our species spend some part of their lives in the estuaries, or are influenced in some way by the wetlands associated with the estuaries.

At this point it seems desirable to attempt to define an estuary. The definition used by the American Fisheries Society states:

"An estuary is a semi-enclosed coastal body of water having a free connection with the open sea and within which the sea water is measurably diluted with fresh water deriving from land drainage." Closely associated with this estuary are the salt-meadows, coastal marshes, intertidal areas, sounds and bays. Important to all estuaries is the input of fresh water from the stream, rivers, or other major land drainage.

The estuary may be thought of as a community providing food and shelter for a variety of organisms. The primary producers are the plants, including the various grasses, cattails and algae that manufacture food from water and minerals with the sun's energy. This food is used by a host of small animals. In addition, the rooted plants in the wetlands help to anchor the soil against the destructive force of storm waves and tides.

The importance of the estuaries and the wetlands can be seen in a recent list of 38 commercial species considered to be dependent on estuaries. The marine animals range from alewives, eels and flounders to periwinkles, bloodworms and sandworms. The inner portions of the estuaries, closer to the wetland, are nursery grounds for flounders. Porgies and tomcod also are found in these nursery grounds. Scallops, clams and oysters are found in many of the inner parts of the estuary, and much of the organic material from decaying wetland plants are incorporated into the food used by shellfish. Blue crabs move into shallow waters each summer -- many of them females with their attached eggs -- to feed on the decayed organic material. And in the inner estuary, adjacent to the wetlands, the crab eggs hatch and the young crabs go through various changes and become adult crabs.

Can we put a direct dollar value on our coastal wetlands beyond the actual dollars resulting from the harvest of fish and wildlife? At this point it should be obvious that we cannot, although every thoughtful person recognizes that the value exists. If we lose our wetlands through neglect, pollution, filling or dredging, we immediately close down the factory that supports the estuarine community. It is not difficult then to visualize the eventual effect on our harvestable finfish and shellfish resources.

Underwater lands in our marine region are generally speaking owned by either the local government or the State. The waters are the property of the State, as generally are the fish and wildlife living therein. It seems to follow then that the basic responsibility for the use and development is lodged within the State. Already the State has entered into partnership with local government in the preservation of wetlands and this close relationship should be nurtured and developed further. At the same time, the State and Federal government must develop a similar relationship in the instances where interstate problems exist which tend to damage or deteriorate the quality of our estuaries and coastal waters.

CHAIRMAN KLASHMAN: Thank you very much for your presentation. Your statement will be included in the record.

MR. DE CAMP: I have one word, because I am afraid the record might indicate or give a slightly misleading impression about the shellfish. This map shows all of our lower bay closed to shellfish. After all the treatment plants have been put in, their combined effluent would then amount to about 750 million gallons a day. However, you still would not recommend the opening of areas presently closed to shellfish harvesting?

MR. WALLACE: We certainly would be extremely cautious in making available any areas that have had a history of pollution. First we would want to make bacteriological hydrographic studies of the area. I would say we would have to be extremely cautious, Dr. De Camp. There are areas, however, where conditions have improved very much along the Westchester shore; for example, this area has been closed for some 40 years, but because of the improvements in the sewage system in Westchester County there has been a substantial increase in quality of water. And I would hope that some 20 to 30 square miles of water would be open for harvesting shellfish in the very near future.

MR. DE CAMP: They are not built with the combined sewer?

MR. WALLACE: That's an entirely separate situation.

MR. SHAW: May I ask one question to clarify the record?

I realize that you are concerned only with New York State waters.

MR. WALLACE: Yes, sir.

MR. SHAW: I don't want this audience to have the wrong impression here. Are you under the impression that all of Raritan Bay has been closed?

MR. WALLACE: No, I am speaking only of New York waters.

MR. SHAW: I want to make it clear, because at least one other speaker this morning suggested that all of Raritan Bay and Sandy Hook Bay had been closed. This, of course, is not the truth; the fact of the matter is that, like some of the Westchester waters, Raritan Bay has expanded in the last two or three years.

MR. WALLACE: I didn't mean to give you that impression.

MR. SHAW: I want to make it clear that you are not saying that.

CHAIRMAN KLASHMAN: May I now call on Mr. Frederick Richardson of the New

Brunswick Water Group.

MR. RICHARDSON: I deem it a great privilege to be here today and be afforded this opportunity. I think the conference is very timely and I think it will do a lot of good.

It is about a year ago when we assembled at the Waldorf Astoria Hotel; we had people with us then who are here today, but I speak particularly of Robert Kennedy and Mr. Elston Killam who has been an engineer for a great many years. Both of them, of course, are not here today, and I think that we will surely miss their guidance and constructive help in the times to come.

In this conference today -- and those who heard me a year ago will remember that I was not very sparing of the whip. I have been associated with the Raritan River Works for a good many years and naturally there has been some very severe and deserved criticism which I have made; but today I am not making any criticism. I hope through advanced, constructive ideas -- I hope I may present some advanced, constructive ideas.

I produced a chart here which I hope, with the aid of this new pointer that I slashed myself with -- there is the Raritan River coming down from up at New Brunswick (indicating), and this is the Perth Amboy shore and South Amboy shore, and there is the shore that leads down to Keansburg and down to the Atlantic Highlands into the Jersey shore. This is the Kill Van Kull coming through here and into the Atlantic here. The Kill Van Kull runs into Newark Bay. This is the Raritan Bay, and you will notice in white insertions here, I think you can see it, it's the evidence of construction of a new channel which has been going on now for some years and is still progressing.

CHAIRMAN KLASHMAN: Would you mind identifying that? What's the source of the survey chart?

MR. RICHARDSON: The latest government issue that I was able to get. The Raritan Bay and the southern part of Arthur Kill, United States East Coast, New York and New Jersey; it is numbered 286.

CHAIRMAN KLASHMAN: And the scale?

MR. RICHARDSON: The scale is one to 15,000 feet.

CHAIRMAN KLASHMAN: Thank you.

MR. RICHARDSON: And I don't see the date for the moment, but I am sure it is in 1962. I mention this because this shore that I am pointing at is the New Jersey shore from South Amboy down to the highlands, very shallow, almost no water is there; two, three, four feet for a great extent into the bay. The same conditions exist over in Staten Island from the point down past where Father Grumangrow's boys' rectory used to be, and all the way down to the Great Kills harbor.

Now, this chart out here is where the sedimentation really is.

CHAIRMAN KLASHMAN: Do you want to identify what you are pointing to?

MR. RICHARDSON: It is what is called the Great Beds; there used to be a lighthouse there many years ago, and there is a flasher there now. But these beds, there are three or four or five miles, and that's where the channel is going up in the Raritan. But my point now is that the government is excavating a great portion of these Great Beds and the more they take out, the more deep water you are going to get, naturally. And deep water is going to be the greatest help for pollution cure and control that you can think of.

So I first make this point: I think the United States Government not only should continue this channel and the work it is now doing, but should extend it and at the same time have a ready disposition for the sand and silt and the mud by depositing it over the New Jersey shore and recreating the land mass that the gentleman on the end spoke of several times this morning, and the same situation can be done on the Staten Island shore.

Now that's not a dream. I have here the report of the Raritan Bay Industrial Development Project which goes into this very project. Now, it is unfortunate that the State backed the wrong position in that and they tried to unload a heavy industry plant, a polluting industry, and the public wouldn't go for it. But the report itself is very well documented. There are many charts and data that I think we can make use of in moving that.

CHAIRMAN KLASHMAN: Mr. Richardson, what report are you referring to, please?

MR. RICHARDSON: The Raritan Bay Industrial Development Project, County of Middlesex, State of New Jersey, by Burns and Roe, Inc., 1967.

CHAIRMAN KLASHMAN: Thank you.

MR. RICHARDSON: I would like to see the government -- and I want this in the record so that the government can use this report for the purpose of establishing the feasibility of what I said, that we can reclaim the whole shore here for light industry, or parts for beaches and for recreational activities, and the same goes for the Staten Island shore. And it can be reclaimed at no great cost, because of the ready accessibility for a site for this surplus material and the fact that in and around the Great Beds, except when you get out here beyond where the light used to be, beyond the Great Beds it is deeper -- some 13.5 feet -- but in and around between the Great Beds and the entrance to the Raritan River there is very little water. And I am sure, as far as Sayreville, there is almost no water -- that's the side -- all its channel is on the Perth Amboy side.

Now, I think that's a feasible thing, and I think with this study that we have we are perfectly justified in thinking that the large areas of this shoreline on both New York and New Jersey sides can be reclaimed. Now, my problem is this: first, what are we going to do with the sedimentation and what are we going to do to prevent the recurrence? It is not enough to move it, because in five years it will all be back there again. But the first step is to remove as much as we can and to get as much deep water in the area for marine use and for pollution control that we can.

Now, the second step is how are we going to prevent a repetition unless we can stop what is taking place, where we are going to have one step forward and maybe two back, because I notice in our area all the time new plants are coming in. You control an old plant to some extent, and the first thing you know you have a new nuisance on your hands.

Now, the elimination of this situation is very important. And I suggest what might not be practical; I don't know; I have never made any study of it particularly, but I think it is possible if we seal off the Newark Bay up near Elizabeth Port and diverted that water from Newark Bay into -- under the Bayonne Bridge to the upper New York Bay, and sent it down by way of the Narrows, we would stop this great confluence of pollution that exists in this area, brought in by the Staten Island Sound and the Raritan mixing together; they both come together like two drains, and that's what's creating what they properly called on this map the Great Beds. It means great beds of sedimentation. And if they seal off this Newark Bay area and divert the water to the Narrows --

CHAIRMAN KLASHMAN: Is this the Kill Van Kull you are pointing to?

MR. RICHARDSON: Yes.

CHAIRMAN KLASHMAN: Is it the nearest?

MR. GLENN: It is Arthur Kill.

CHAIRMAN KLASHMAN: It is the northern end of Kill Van Kull?

MR. RICHARDSON: Yes.

MR. GLENN: The Kill Van Kull runs up to the northern end?

MR. RICHARDSON: I always refer to the whole thing as Staten Island Sound.

CHAIRMAN KLASHMAN: But it is the northern end?

MR. RICHARDSON: Yes.

CHAIRMAN KLASHMAN: Thank you very much.

MR. RICHARDSON: I wish the Department would make a study of that, because the elimination of this condition can only be brought about by some drastic measures such as that, and I think it is practical.

CHAIRMAN KLASHMAN: Mr. Richardson, you have one more minute for your ten minutes; right?

MR. RICHARDSON: You give me the signal and I will quit, because I can send this to you.

CHAIRMAN KLASHMAN: We will be very happy to accept what you have.

MR. RICHARDSON: The second thing -- and it is a question in the Raritan River which dam should be built first, whether it is the south river tidal dam or Crab Island. They both can't be built, and there is a lot of confused thinking about it, and I think the Department ought to give us some guidance, some guidelines.

The third thing is what to do about the Middlesex County sewage plant; it is now operating very inefficiently and it should be up to the Department to make some suggestions about what could be done.

Now, I only have a minute and I want to exploit one more thought. The idea came to me that it is possible in these congested areas, pointing to the confluence of the Kill Van Kull and the Raritan River where the water is very shallow, to seed that water with some mineral mines just the same as we seed the clouds, and where the water is shallow we put these mines in and let the water as a matter of time erode them and explode them and have anti-pollution chemicals in them. It may not be practical; I never heard of it; but it is something that I asked my friends that have been fighting for years; some of the industries could try to come forward with something like that. That would be very helpful.

I think that it has a germ of a possibility, and I think a little research by the people who have the responsibility may be very helpful. I think that's all. Thank you very much.

CHAIRMAN KLASHMAN: Are there any questions from the panel?

MR. RICHARDSON: I hate to run away, but I have a meeting with my granddaughter. And as much as I like water pollution, I like my granddaughter better.

(Applause.)

CHAIRMAN KLASHMAN: May I call now on Mr. Roger H. Gilman, the Port of New York Authority.

MR. GILMAN: The Port of New York Authority appreciates this opportunity to present to the Federal Water Pollution Control Administration its views concerning the control of pollution in the tidal waters in New York and New Jersey and a report of its activities in this field. We also wish to submit data and other information on the development and operation of the

Port of New York as the nation's leading gateway for foreign trade.

The Port of New York Authority is a public agency of the States of New York and New Jersey, created by Compact in 1921 and charged with the responsibility for the promotion and protection of the commerce of the Port of New York District and for the development of public terminal and transportation facilities. The Compact defined the Port District as an area involving portions of both States within a radius of about 25 miles from the Statue of Liberty. The area has a present population of about 13,000,000.

The Port Authority has a broad interest and certain specific responsibilities in matters that pertain to the Port's waterways, harbor facilities and commerce. Under this responsibility, we are greatly concerned about the need for better control of pollution and debris which adversely affect the harbor's waters and shorelines in both States.

For many years the Army Corps of Engineers has conducted a program involving the use of a special catamaran-type craft with a net suspended between its two hulls to scoop up, for eventual disposal, the floating debris that litters the harbor and its tributary waters. However, this program is confined largely to federal channel areas, and only attacks the result of this type of pollution and not its causes and sources.

For this reason, some five years ago the Port Authority, in collaboration with the New York City Department of Marine and Aviation, many civic and maritime associations and other commercial and recreational boating organizations in the New York-New Jersey Port, initiated a vigorous campaign to seek a basic solution to the problem. As a result, the Army Corps of Engineers was subsequently authorized to make a study and develop recommendations for the physical, legal and financial means of removing the wrecks and abandoned waterfront installations that cause this floating debris in the harbor. It is our understanding that the Army Engineers will release the findings of this study in the near future.

Floating timbers, originating from rotting hulks and derelict shore structures, not only have been the cause of an estimated $8 million a year damage to all types of craft using the Port, but constitute an eyesore and a detriment to the economy of the entire Port. The sources of most of this debris are some 2,000 wrecks and hulks that have been abandoned for countless years along the waterfront in the New York-New Jersey harbor and its tributary waters. Unused piers and bulkheads that are being allowed to slowly disintegrate also contribute to the accumulation of flotsam. In some areas of the Port these sunken vessels and decaying piers have seriously lowered property values and sterilized productive land use in addition to being sources of debris with each rise and fall of the tide.

Present laws contain no effective provision for clearing away abandoned craft as long as they do not obstruct navigable channels. If a vessel sinks in a channel, the Army Corps of Engineers undertakes the responsibility of having it removed in order to maintain navigation. However, the majority of the abandoned craft in the Port were deposited in makeshift water dumps outside the channels, where they remain to gradually disintegrate and become floating debris.

The other source of this debris is the result of vast changes in the nation's transportation technology during the 20th century. Due to these changes, various sections of the harbor's waterfront, and the piers thereon which once were the scene of busy shipping activity, are virtually abandoned. Although some progress has been made in tearing down old piers in Manhattan and some piers in Brooklyn have been replaced with new ones, many unused and rotting piers still remain along the shores of both States. These piers collapse piecemeal into harbor waters until the structure finally falls apart.

Port interests anxiously await the results of the Army Engineers study of this problem and hope that the Corps will be able to recommend workable ways to effect a cleanup and prevent a recurrence of this deplorable condition. The assistance of the Federal Government will be critically important to this effort.

In this meeting at the Port of New York dealing with the impact of pollution on coastal and estuarine waters, it is, of course, pertinent to discuss the effect of shipping and boating on the harbor waters. As the nation's busiest port, the New York-New Jersey Harbor is used by virtually every type of vessel afloat. In size, the vessels range from the superliner Queen Elizabeth, the world's largest passenger ship, to small rowboats. On every business day passenger liners, combination passenger and cargo ships, freighters, containerships, tankers, naval vessels, ferryboats, pilot boats, tug boats, carfloats, other types of barges, dredges, derrick barges and pleasure boats navigate the harbor's waters or are tied up at its piers. The list is long; the total number is in the thousands.

It is not exceptional for up to 200 large merchant ships to be in this port at one time. The Customs Service records a total of 23,000 entrances and clearances a year. This does not include the many thousands of voyages made during the year by small harbor craft which never put out to sea.

For many years, local and Federal laws have prohibited vessels from disposing of garbage and wastes such as oily bilgewaters by throwing or pumping them overboard while in coastal or harbor waters. The Coast Guard and marine divisions of local police are charged with the enforcement of these laws. While enforcement is sometimes spotty, it has had a deterrent effect, especially on large merchant ships. Some passenger liners dispose of garbage while in port by having it carried away by private contractors; most vessels keep such refuse aboard ship until they are sufficiently at sea to toss the garbage overboard without danger, hopefully, of contaminating the beaches of Long Island or New Jersey.

The disposal of sewage from merchant ships and harbor craft is another matter. It has been the practice since the Dutch opened trade with the Indians 350 years ago for vessels in the harbor to dispose of sewage by pumping, ejecting or simply allowing it to drop overboard. Bills were introduced last fall in Congress which would give the U. S. Department of Transportation authority to adopt and enforce regulations making it unlawful for vessels to continue to dump sewage into coastal or harbor waters. The bill has been passed in the Senate but is still pending in the House of Representatives.

Meanwhile most of the sewage from the many vessels using this New York-New Jersey harbor is allowed to flow into its waters untreated. This seems to be common practice for vessels in almost every major salt water port throughout the world.

Actually the pollution caused by these craft has been miniscule compared to the pollution from shoreside sewers emptying into those same waters. Of course, New York City and other municipalities in the New Jersey-New York-Connecticut area under the jurisdiction of the Interstate Sanitation Commission are rapidly expanding their sewage treatment facilities and the day will come, perhaps, when sewage discharge from the shore will cease.

If and when the time comes for the shipping industry to alter radically its present procedures of disposing of sewage in order to clear up water pollution, I am sure that the utmost cooperation will be given. We can foresee no serious problem other than the cost thereof in providing shore facilities to receive sewage from large or small vessels while berthed in the Port. While such measures would not eliminate the problem, they would aid by reducing it.

Recently the Port Authority has participated in the formation of the Newark Bay-Bayonne Harbor Pollution Abatement Committee. This Committee, made up of representatives of the Port's major oil terminals, the Army Corps of Engineers, the Coast Guard, local community fire departments and other Port interests, has held meetings for the purpose of discussing possible solutions to oil pollution and methods for cooperative control of accidental spillage problems. At present, data are being collected on available material and equipment located in the harbor which could be mobilized for a cleanup operation in case of a pollution accident or emergency.

It has also come to our attention that the local market for reclaimed waste oil from ships and shore tanks and other sources, such as from automobile crankcases, is apparently extremely limited. In the past much of this waste oil was disposed either by burning, thereby contributing to the problem of air pollution, or taken out to sea and dumped. The need for a solution to this problem continues to increase with the growth of the Port's vessel and tanker traffic.

While ever mindful of the need to minimize avoidable, negligent and unnecessary pollution of the waters in and adjacent to the Port of New York for the health, enjoyment and well-being of the residents of the Port District, it must, however, not be forgotten that the Port itself -- in the past, present and future -- is a vital part of the economy of the region and indeed the nation. Some 170 steamship lines, 58 harbor carriers and towing companies, and numerous deep-sea bulk and industrial transportation companies utilize the 250 miles of channels serving 650 miles of the Port's New York and New Jersey waterfront for their vitally important activities. Thus, in 1967, nearly 23,000 ocean vessels arrived and departed the Port of New York, representing over 20% of the total volume of ship traffic utilizing the nation's eleven major seaports. Last year, the annual volume of waterborne movement of foreign commerce through the Port of New York was some 55 million long tons, or about 14-1/2% of the total United States trade. In value, this export-import commerce amounted to almost $13 billion a year, which is 35% of the total national value of oceanborne foreign trade.

To meet this Port need in the light of changing transportation technology, tremendous new marine terminals representing an investment of over $500 million have been built in the New Jersey-New York Port since the end of World War II, often in new locations in the harbor. This has been particularly true in Newark Bay where completely new and modern facilities have been provided by the Port Authority for the constantly increasing number of containerships operating in the various worldwide trade routes. Along the Brooklyn waterfront, new piers, principally serving breakbulk operations, have been built to replace many of the old wooden ones.

The Port Authority has estimated that the waterborne movement of cargoes through the Port of New York is directly responsible for more than 430,000 jobs in countless and varied business activities in the New Jersey-New York Port District. Any diminution of this foreign trade flow would, of course, have a correspondingly adverse effect on the employment and economy of this region. We suggest, therefore, that a comprehensive study of water pollution control for the purpose of enhancing the quality of the water in a port region must also recognize the economic importance of the port itself to the livelihood of its residents and to the economic welfare of the community and the nation. You can be assured that The Port of New York Authority is ready to assist in this study, which is of such vital significance to all who live and work in the New York-New Jersey Port District. Thank you.

CHAIRMAN KLASHMAN: Thank you very much. Do you have any questions?

MR. GLENN: I want to thank Mr. Gilman because I think he puts his finger on two important parts which will have to have more attention when we get the other pollution out.

CHAIRMAN KLASHMAN: I am confident about what you said, sir.

I have a telegram from Senator Javits:

SENATOR JAVITS:

"Regret unable to attend public meeting being held to discuss estuarine preservation and development problems. Be assured of my interest in this critical conservation problem. Estuaries are an important part of natural life and beauty and must be preserved, for they are of great commercial, as well as recreational, value, particularly in such states as New York. The urban explosion and its accompanying sprawl of development threaten our estuaries. It is my hope that your discussions as well as future administrative and legislative action will concentrate on maintaining the proper balance of development and conservation with regard to estuaries. I look forward to cooperating with you in this regard." Signed, Senator Javits.

I now call on Mr. Keeler, Chairman of the Rensselaer County Sewer Agency.

MR. KEELER: Gentlemen, I am Richard W. Keeler, Chairman of the Rensselaer County Sewer Agency. Rensselaer County is located at the northern extremity of the tidal portion of the Hudson River and, hence, we have the first opportunity to discharge wastes to the estuarine portion of the river. We also have the first opportunity to demonstrate what an enlightened, responsible county can do to abate pollution and we have taken the lead in this endeavor in the Capital District.

Since the hearing held by Mr. Murray Stein of your agency last September, our County Sewer Agency has prepared, printed and mailed some 20,000 brochures explaining the needs, recommendations and solutions to abate pollution of the Hudson River by the City of Troy and the suburban towns surrounding the city. Agency members have appeared at numerous meetings of interested community groups, as well as meetings of town, city and county officials to explain abatement proposals.

The success of the Agency was proven at a public hearing held by the Rensselaer County Board of Supervisors, at which many people spoke in favor of the proposed Rensselaer County Sewer District #1. The Board of Supervisors unanimously passed a resolution establishing the proposed Sewer District. The 30-day waiting period in which to file a permissive referendum petition, as required by New York State law, has passed without challenge. We are now in the process of securing project approval by the State Department of Audit and Control. Construction grant clearances from Federal and State agencies have been secured.

With area-wide needs in mind, the County Sewer Agency has also offered its services to the City of Rensselaer, its industries and surrounding suburban communities, to study the feasibility of either combining with County Sewer District #1 or establishing a County Sewer District #2. This offer has been accepted by the industries and municipalities involved and the Rensselaer County Board of Supervisors unanimously passed the necessary resolutions providing the financial aid to do the necessary engineering studies. The Agency has instructed its consulting engineers to proceed and report back in September/October 1968, in accordance with instructions of the State Commissioner of Health.

This engineering report will permit a decision to be made by the municipalities and industries involved as to whether they will join with us by December 31, 1968. We feel that a sizable financial saving in construction as well as operation and maintenance of the treatment facilities may be accomplished by this larger combination, as well as producing our country's share of abatement of pollution of the Hudson River.

I should also like to speak as Supervisor of the Town of Brunswick as I did last September. Brunswick is a rapidly-growing suburban town contiguous with the City of Troy. Portions of the town will be immediately served by the County District. Recently, our town conducted two studies in unsewered areas that are badly in need of public sewage facilities. In some cases, overflows from private disposal systems either flow to tributaries of the Hudson River or cause ground water pollution. The best possible engineering cost estimate to provide public sewers comes to approximately $160-$200 per year for an average one-family home located on a 100-foot front lot. This cost, spread over 30 years, with the annual figure reduced as less interest is paid each year, presents the local taxpayer with a total cost of between $4,000 and $5,000. To you gentlemen present today who are not elected officials, this is what is known as an "unreasonable tax burden". From this example, it is obvious that a local government cannot "sell" such a costly program and thereby correct ground water pollution, as well as pollution of the Hudson River.

However, should State and Federal government, under the Clean Waters Act and/or HUD, together with the State of New York Pure Waters Program, place local government, with its sewage needs, in the same position as a county sewer district, whereby there would be a 50-60% guaranteed reimbursement, local government could meet its responsibilities and provide the facilities at a cost that the local taxpayer could afford.

In many cases in our suburban areas, it is impossible to talk sewage treatment when the local taxpayer cannot afford the cost of building sewers to get the wastes to a treatment plant in the first place. I urge that this matter of sewage costs be given serious attention.

I cannot give specific answers to questions you are particularly interested in concerning management of the estuarine resource. I might say that our engineers have had no difficulty in designing an adequate secondary treatment plant to discharge to tidal waters. We are too far from the coastal areas to know what effect our discharges have at the southern end of the estuary. However, clean water introduced at one extremity of an estuary can only help the total over-all coastal area problem and thereby restore these areas for complete use by us and our posterity.

I wish to thank you very much, Mr. Klashman, for the opportunity of being here.

CHAIRMAN KLASHMAN: Are there any questions? I would like to call on Mrs. Wilfred Armitage of the League of Women Voters.

MRS. ARMITAGE: You have a couple of pioneers from New Jersey on your hands now. I am Mrs. Wilfred Armitage, First Vice-President of the League of Women Voters of Brick Township, Ocean County, New Jersey, and Chairman of its Water Resources Committee.

My assistant is Mrs. Paul Newman of Brick Township and a member of my committee.

My map is of the upper or northern portion of Barnegat Bay, south to Toms River, Ocean County, New Jersey. It shows the waterways of Brick Township which flow into the northern portions of the Bay.

Brick Township covers 27 square miles and is one-third developed. Brick Township borders Barnegat Bay on the west. These waterways, Beaver Dam Creek, the Metedeconk River and Kettle Creek, flow into the bay. The population is 27,000 year-round, with an increase to over 50,000 in the summer season.

Under the Federal Water Quality Act of 1965, the waterways of Brick

Township and Barnegat Bay were graded for recreational purposes. The people who live here and vacation here do so for the recreational aspects of the area. Water recreation is our only large industry and our greatest asset. Our entire economy depends upon it. The loss of these waterways to pollution would result in a tremendous drop in real estate values, as well as a great loss to business in serving the needs of the people attracted to the area.

I recently went on a "go-see" boat trip sponsored by the Tri-State League of Women Voters and the Federal Water Pollution Control Administration to see the ravages of industry and population upon the metropolitan waterways. It would be a disgrace to see the beautiful Barnegat Bay Area destroyed in like fashion.

The waterways of Brick Township at present receive very little pollution from manufacturing industry. Our pollution is of a municipal nature, shopping centers and residential -- also boats privately owned, docked and afloat in the waters. We have only one sewage treatment plant which services a very small portion of the municipality. The vast majority of the township has septic tanks. The State Board of Health of New Jersey limits the coliform as safe at 2400.

It seems that the possibility of sewerage facilities for the entire municipality is remote. A recent letter addressed to United States Senator Clifford Case from Col. R. L. Seidel, Corps of Engineers, and Assistant Director of Civil Works, reads, and I quote:

"See enclosed copy of letter, The New Jersey Division of Fish and Game reports that the Metedeconk River is at the upper limit of its capacity to assimilate pollutants from such sources as effluents from

sewage treatment plants, seepages and percolations from septic tanks, runoff from farmlands and organic discharge waste from watercraft. More than 21,000 acres of water have been closed to the harvesting of shellfish because of the existing and potential pollution."
Still, development goes on unabated, including a recently passed Federal-approved 13-story, 120-unit Senior Citizen Housing Development with septic tank facilities for sewage disposal. Lagoons continue to be constructed on both sides of Barnegat Bay for the purpose of building small plot homes which have septic tanks often flooded and overflowing when the water table is high. As the water table recedes, the septic tanks' effluent also enters these lagoon waters adding to their pollution.

In recent years there have been a number of fish kills in the Metedeconk River and there is a steady decrease in the number of crabs. The abnormally large aquatic growth in the river and the bay is only held in check by hand harvesting at the shoreline, which is an ever-increasing expense to the local, county and state governments. At the present time the Philadelphia Division of the Corps of Army Engineers is conducting a study to determine the source of this plague and a possible solution to the problem.

During this past month, 12 beaches in Brick Township have been declared unfit for swimming due to the high coliform count. Several of these beaches had a coliform count of 7,000-plus. Contradicting reports were issued to the public and further bulletins regarding the water conditions were not made public through the news media -- a flagrant disservice to the people of the community.

In order to help preserve the recreational -- and I might mention that we drink only well water; there is no local plant for wildlife preservation -- environment of north Barnegat Bay, the few remaining coastal marshes are desperately needed not only as habitat and storage places of food for fish and other wild life, but as buffers for flood waters during the hurricane season and other sea storms. The marshes are also needed to dilute, break down and disperse nutrients, pollutants and poisons washing into them which would otherwise destroy the estuaries.

The development of these marshlands also means the loss of the fresh water table resulting in the intrusion of salt water. There is no local plan for wildlife reservations in Brick Township.

The portion of land called Swan Point has been acquired by the New Jersey Green Acres Program and an effort is being made to have the Green Acres Program acquire Herring Island at the mouth of the Metedeconk River. New Jersey also has a State Park at Island Beach between Barnegat Bay and the ocean. The "Strip Area" north of Island State Park and between Barnegat Bay and the Atlantic Ocean is almost completely developed with lagoons and residential and commercial developments.

It appears that the development of Brick Township is dominated by self-serving land owners and builders with little regard for the future of the area as to recreation. Because water recreation is our only large industry and the economy of the area depends upon it, we would like to secure the help of the Federal Government in determining sources and controls of pollution since the local, County and State governments are obviously unable or unwilling to do the job.

As to the future of the estuaries in our area, let us be mindful of the projected population boom in New Jersey and the whole eastern seaboard which in 30 years promises to produce a megalopolis from Boston to Washington. As a result of automation one of the biggest problems facing our country will be leisure time. It is a duty and a responsibility to future citizens that some areas along the Atlantic Seaboard be preserved for all recreational purposes.

Thank you.

CHAIRMAN KLASHMAN: Thank you very much. Mrs. Armitage, is there something else?

MRS. ARMITAGE: I also have a report of the Ocean River Bank Association, but due to the fact that you have so many I will just turn this in.

CHAIRMAN KLASHMAN: Give that to the reporter, Mrs. Armitage.

MR. SHAW: I would like to express our appreciation.

I do have a question for you, but having made that nice speech I might be correct or incorrect in assuming that you and your group are familiar with the fact that the State Health Department in New Jersey has sponsored and paid for and is still promoting a comprehensive facility for all of Ocean County, including Brick Township?

MRS. ARMITAGE: Well, I am aware of that. There are several sewage systems being offered in the County and in the Metedeconk Basin, none of which has gotten past the talking stage, and I would like to say that at a meeting of the League of Women Voters as of yesterday we are going on record as starting a petition demanding that we get going on this sewage.

MR. SHAW: For your benefit, I would like you to know that the study promoted and paid for by the State of New Jersey has just been completed a few months ago, and anything you people can do to help us to promote it will be more than helpful.

MRS. ARMITAGE: Thank you very much.

CHAIRMAN KLASHMAN: I would like to call on Mr. Edward F. Taylor, Architects Renewal Committee.

While Mr. Taylor is coming down, I want to announce that Mr. Philip W. Wood, Larchmont-Mamaroneck Nature Council, was unable to remain; he will send in a statement for the record.

MR. TAYLOR: My name is Edward F. Taylor, from the Architects Renewal Committee in Harlem.

CHAIRMAN KLASHMAN: Mr. Taylor, is this your entire statement?

MR. TAYLOR: That is most of my statement. I will read it.

CHAIRMAN KLASHMAN: We will have the statement go into the record as if it were read.

MR. TAYLOR: I have three parts to the statement: an article, an editorial that was placed in the Harlem News in the last issue; a statement prepared for the Board of Estimate Capital Budget Hearing, City Hall, February 13, 1968 by Mr. M. A. Benjaminson, Ph.D., microbiologist for the U.S. Navy; a statement by the Committee for an Unpolluted Lower Hudson for residents along the Lower Hudson; an editorial of the Hackensack, New Jersey The RECORD, dated July 30, 1967, and a report of the committee appointed by the Borough President of Manhattan on Alternate Sites for the Proposed North River Water Pollution Control Plant.

I would like to enter all of these documents into the record (Editor's Note: See Part II for this material), and I will only discuss a couple of points from each on the North River Water Pollution Control Plant, and also I would like to offer some pointers which the Federal Government, the State government and the City government can take to heart so that they will not get into that type of trouble again.

The North River Water Pollution Control Plant -- the Department of Public Works in the City of New York proposed that a sewage treatment plant tunnel, the North River Plant, the sewage plant which is being built on the Hudson River, costs approximately $200 million. This plant we contend is an inefficient plant.

The representative from Mr. Ryan's office has already said that the plant is inefficient. The City-appointed engineer said it will give 55% BOD removal. No newer study has been made and presented to the community as far as I know, and as far as many of the other people know. Therefore we must conclude this is correct. This is not, of course, up to Federal standards; it is not up to State standards; but it was passed by the City of New York anyway under extreme pressure by the City of New York upon the State of New York, and upon the Federal Government. It was let slide by the State and Federal Government.

We contend two things:

1) That the plant is inefficient. We need for more control of pollution on the Hudson River an efficient plant. We are spending $2 million for this plant. This plant will be here in 1990, and will be here in 2090 probably. This is a long-range plant; it is the largest plant of this type in the world, if I am not mistaken. And a plant of this type, according to the engineers, is inefficient. I think it should not be allowed.
2) The community involved in the placement of this plant was not consulted, was not consulted in the placement. I think this is one of the crucial points.

Persons have already gotten up here this morning and this afternoon stating that the community, the people, the citizens, not the politicians, have to be involved in deciding in the making of policies and plans for sewage plants and septic tanks, on refuse-burning plants, rubbish-burning plants and so forth and so on.

This country, this nation, is coming to a point where if the community is not involved in planning of the environment, the community is definitely wanting to know why.

This Harlem community, in our case -- and in many other communities very similar things happen -- things are forced on the community. Where the communities are not involved in the plans, where the communities involved -- if the community were involved in the plan there would be no argument, because the community's voice would have been heard. But when the community voice is not heard at the ground-breaking and in the initial stages of planning, and government agencies and boards and Federal and State systems try to come to the community involved with grandiose plans, grandiose ideas, they will not be accepted for a large part because they were not made by the community involved. This is a very simple thing to correct.

If the communities are involved at the outset, at the beginning, the community will know what's happening. And when I say "communities" I do not necessarily mean politics; I mean people. The Federal Government, the State government and the City government are finding it increasingly necessary to involve the community in their own environmental problems: in housing, in welfare and social services. I say that has to be carried into conservation, into travel, into transportation; the communities know what it is that is necessary for themselves. They must be consulted on it. This country is becoming a country of technical crafts, and the communities are rebelling against this idea of technical crafts, this idea of imposed planning.

The North River Water Pollution Control Plant is an imposed plant. The idea of fountains on the plant shooting water 200 feet into the air, and also on the West Side Highway and also a couple of projects that are in the area, is an imposed plan by people who may be visiting the place once. Had they asked the communities in the very beginning they would have gotten no further than the drawing table. This is what I mean by effective community participation. This is what I mean by effective voice. There are a number of groups; labor groups, concerned citizens, the people in the communities involved are interested and I think -- I am an electrical engineer myself -- but I think it is very biased and it is very arrogant of professionals to think that they know everything. I say the community knows a lot; and I say that in any program, not poverty program necessarily, but in any programs in which people are affected by the changing environment, where things are being taken from them or given to them, they must at the ground level, at the root level, at the beginning, be involved.

I think a lot of problems in conservation in our control of our waterways, in the industrial pollution -- not only liquid pollutants but gas, cars, and so forth and so on -- if you wait and you listen to the community and you have persons from the community giving their opinions on your Boards, on your control commissions, then you will get much further than you have gotten. I don't know how this meeting was publicized, but I got it fourth-hand. I am sure that there are a number of people in the communities who would have wanted to be here but were not contacted because, typically, it is the typical professionals who are contacted only. It was not publicized, really. I think this is a grave and fundamental error that is going to cost us, as it is going to cost the City of New York, as it has cost the State of New York in a number of places, as it has cost the Federal Government in a number of projects; it is going to cost untold trouble to untold numbers of people.

So I leave you with this: in all of your planning, don't forget your people.

(Applause.)

CHAIRMAN KLASHMAN: Thank you very much, Mr. Taylor.

I would like to point out a few things to you, if I may. First, this meeting was publicized in the newspapers. Second, the purpose of this meeting is for you to tell us what should go into this report that's going to go to Congress. If you know of anybody that we should contact to get a statement, I wish you would give us these names, and I can assure you that we will be in touch with them to get a statement from them so it could be included in the record.

We thank you very much for your statement. Are there any questions?

MR. GLENN: Mr. Taylor, I do not have any argument with you that we should contact the community. I agree with you, but I think there are a couple of things I should point out to make the record complete.

In the case of the matter of treatment on the North River, you should remember that this was the first plant that was designed, starting back in 1960. And at that time this was before everyone discovered the pollution and they started talking about it, and in 1965 when this plant was nearly completed in design, it was decided on by the Federal and State and Interstate Sanitation Commissions that it should be secondary treatment. In fact, all that was required at the time was primary treatment, and they actually went ahead and added more. Also it should be pointed out that you will not be able to tell the difference between 60 and 65% effluent and the 85 to 90 by just looking at it; it only affects the amounts of oxygen in the waterway, and we do not have the problem in the Hudson now. But what I am getting around to is that I am happy to report to you that they are now changing the design to 90%; so even that will be eliminated with one of the objections. The contractor will proceed with the plant and it will be redesigned to upgrade it higher because of all the objections we had.

MRS. PAYNE: Can I ask a question?

CHAIRMAN KLASHMAN: No. Will you give your name?

MRS. PAYNE: I am Mrs. Payne.

CHAIRMAN KLASHMAN: We regret that we are not able to open the sessions to questions and answers.

CHAIRMAN KLASHMAN: I would like to call on Mr. James V. Neely, Jersey Central

Power and Light Company.

MR. NEELY: I had not really come here today expecting to make a statement. I had sort of come here to sit and listen and see what other people have to say, but it seems to me as the day goes on that these problems give some reason for somebody from at least one of the power companies in the area to make a statement.

The first thing that I would like to do is try to put some of the thoughts that have been brought up today in perspective concerning the causes of pollution, and I don't really want to talk about pollution as such, but I want to talk primarily about how people feel about power plants and how they contribute to the alteration of the environment.

In order to put this thing into perspective, I would like to point out that it is basically people who create the demand for goods and services, and it is the demand that creates the need for industrial and commercial development; it is primarily people's needs that create the need for sewage disposal plants; it is not government that creates these problems and it is not industry that creates these problems. The problems are created simply by the fact that people eat food and eliminate waste materials. People's problems also create demands for services such as electrical services; people demand goods and services which cause development of industry, and the development of industry requires electrical power.

I have never met a single soul who called up the power company and said, "Hey, fellows, I want to buy an air-conditioner. Is it all right?" Nobody asks that, and they get madder than hell if the electricity isn't there when they flip the switch.

We in the power company feel a responsibility to supply the power when the people demand it, and up until fairly recently we have been able to do a reasonably good job of supplying the power as people demand it. I think our friends in Con Ed have had some problems during the hot season in filling the full demand, although I don't believe we in New Jersey had this problem this year.

At the present time, in line with our responsibility to provide power, we have under construction and very nearly completed our nuclear station number one at Oyster Creek in Southern New Jersey south of Toms River; this plant should go into operation within this year or early next year. We are already crowding the capacity of our system to supply the demands of our customers; when this plant goes into operation we will be in much better shape than we have been for many years.

Looking further ahead at the development and demand for electric power, we note that nationally electric power demand is doubled approximately every ten years. Within the Jersey companies the demand is doubling every seven years or eight years. With the construction, with the time for planning and construction of a large power plant, it is getting to the point where it takes from four to seven years to get one from the planning stage into operation; it looks like we are going to be planning and building plants all the time from now on if present growth rate continues. At the present time we have plans for putting a second nuclear unit into service in May of 1973 or mid-1973. This would be our second nuclear unit at the Oyster Creek location. At the present time our Oyster Creek number one station will use water from Barnegat Bay to cool the condensers. When this plant goes into operation, it is expected that the hot discharge, or the warm discharge from that plant during most of the year will not cause any problems for anyone in that area.

Under the present operating conditions we would expect that for a few days during the very hot summer months that there might be some rather high temperatures in the immediate area of the discharge in the Oyster Creek Channel. We have a temperature buoy in operation there, we would not expect that temperature to exceed about 95 degrees -- for more than one or two days of the year under the very hottest. most difficult conditions. For most of the other periods of the year we would expect that these temperatures would be at such a level that they would not cause any problems. The plans for this station were made at a time when neither the Federal nor the State agencies that are concerned with these matters had begun to reach any agreement on water quality standards. In planning the second power plant at Oyster Creek, the Jersey Central Power and Light Company is now trying to anticipate what these water quality standards will be when they are agreed upon and certified and formalized, and the design of our second unit is definitely intended to accommodate these standards.

At the present time, for this second unit, we plan to design a warm discharge system which will serve both units number one and two, and when this warm discharge system is placed into operation there will be no heated water discharged to Barnegat Bay. We plan to spend money in order to do this on the order of tens of millions of dollars, to construct a discharge pipeline to carry out warm discharge water across Barnegat Bay and out into the Atlantic Ocean.

CHAIRMAN KLASHMAN: Mr. Neely, can you finish in about a moment?

MR. NEELY: Yes.

We are doing this directly in response to the need to strike a balance between the needs of our people for electricity and the needs of our people for safe and clean water areas, for sports, recreational use.

I might point out that before these plans are implemented the State and Federal agencies who are concerned with these matters will have an opportunity to review the design and the proposed operating conditions and we will make every effort to accommodate any comments or any changes in the design that they request to meet these water quality standards. We have a number of reports, a number of studies which we and our engineers and consultants have prepared which detail our plans for this project, and in recognizing the importance of this conference to the public interest, we will consider submitting some of these things for the record.

CHAIRMAN KLASHMAN: We will appreciate that.

MR. NEELY: I just want to express one more thing, and that is the Jersey Central Power and Light Company is making this commitment on the order of tens of millions of dollars on this system voluntarily, recognizing the needs and enhancing the environment. We are not taking this action under duress from any Federal or State agency.

I point this out so that some of the disgruntled citizens know that some corporate citizens are making an investment in design and resources.

CHAIRMAN KLASHMAN: Mr. Neely, can you give us some idea --

First, we want to commend you for what you are doing. But can you give us some idea of what it will mean to the cost of power? How much will it add to a kilowatt to take care of the temperature, and what will that mean to the consumer as far as their rights?

MR. NEELY: At the present time our cost estimate for the entire project for Oyster Creek number two plant, the project cost has increased 10 to 15% to build.

CHAIRMAN KLASHMAN: What will that mean in terms of the cost per kilowatt?

MR. NEELY: Since we are a regulated industry, any change in rates, of course, would have to go before the regulatory bodies that have to approve changes in rates. We do not know yet.

CHAIRMAN KLASHMAN: What will it mean in terms of the cost in power to the company? I don't mean what it costs to produce power, but that element of cost, the increment element for taking care of the temperature?

MR. NEELY: I said it increased the capital approximately 10 to 15%.

CHAIRMAN KLASHMAN: How many mils will add to the cost of producing the kilowatt of producing power?

MR. NEELY: I don't have a figure, but if you amortize the capital cost over the life of the plant, that will determine the cost of the power. As to the thermodynamic efficiency, I don't believe there is very much difference in thermodynamic efficiency with what we are doing.

CHAIRMAN KLASHMAN: Would it be very much of a job to give us a figure of whatever it means in terms of increased cost per kilowatt?

We have obtained figures of this sort from some of the other power companies.

MR. NEELY: I think we can develop a figure on this.

CHAIRMAN KLASHMAN: We will be most grateful to you for that.

MR. NEELY: Yes.

CHAIRMAN KLASHMAN: Do you understand the question?

MR. NEELY: Yes, I am just not prepared to give you an answer.

CHAIRMAN KLASHMAN: I appreciate that. Thank you very much.

I would like to call on Mrs. Elizabeth Wallace, the Executive Secretary of Oyster Institute.

MRS. WALLACE: My name is Elizabeth Wallace, Director of Oyster Institute of North America, representing the molluscan industry of our country and Canada and three species of oysters and three species of clams. Those who make their livelihood by farming the estuaries have everything to gain by this Water Pollution Study. The trade association, The Oyster Institute of North America, represents the producers of clams and oysters. We have had representation at all previous public meetings so that our vital interests in the preservation and restoration of the estuaries will be recognized. We have to be persuasive enough to make food production a prime national consideration of the uses of our bays and tidal streams. The value of the estuaries to us is food in the form of protein. In 1966 and in 1967 the combined production of New York and New Jersey was at least 11.5 millions of pounds of molluscan meats. The major species included in this count were hard clams, oysters, soft clams, mussels and bay scallops.

No longer can we be casual about the potential protein production of our underwater land. In the documentary Hunger in America it was the deficiency of proteins that deprived the victims of the building blocks that develop the number and quality of the cells of their minds and bodies. In Japan, the first use of their waters is the production of food; the second is transportation; and recreation comes in as a poor third. It is said that the Japanese using the full column of water and all the species estimate they could feed their entire population with a system of estuaries equivalent to that of the Chesapeake Bay.

As an indication of estuarine productivity, with our current practices, an acre of prime clam ground can produce 40 bushels, or 580 pounds of meat per year. In oyster farming in this county it is possible to grow 4000 pounds of meats per acre. This is a grazing or fattening operation carried out on prime hard bottom land.

Our industry has been damaged by pollution in every way. Who knows the potential of molluscan products that are available or could be produced if the various pollution factors were abated?

Pollution is related directly to the numbers of people and their activities. In congested areas as in the New York-New Jersey Metropolitan complex, the needs of these people are the compelling reason that the estuaries be restored for space, recreation and food.

The effort of New York City as reported by Dr. Merril Eisenbud of the Environmental Protection Administration is exciting to us and encouraging in the scope, the dedication and determination of the people who are commissioned to achieve this gargantuan assignment. It will take the total cooperation and good will of all involved. Let us not waste energy on jurisdictional differences. I presume that is a waste of time to say that.

Our members will help with information and political support. In every estuarine region it will require local understanding and support and cooperation with State and Federal agencies to eradicate the sources of pollution that degrade the estuaries.

The estuaries under consideration are comparable, being in the main shallow bays behind barrier beaches. These are among the most productive bodies of water in the world. To make them most useful, the collected domestic and industrial pollutants must be disposed of in the ocean. The concentration of boats in New York and New Jersey underscores the necessity of ocean disposal to help us keep the nutrient levels under control. New York fortunately already has a boat pollution law, which is Article III, Sec. 33, requiring pollution control devices on all water craft. The measure of the problem in New York is a total registration of 417,529 boats. Of these, there are 34,180, 8.3% in the Metropolitan area; 47,200, 11.23%, in Nassau County; 58,993, 14.04%, in Suffolk County, and 14,504, 3.4%, in Westchester County.

Accompanying this report are the production statistics of the species in the various productive areas. A careful analysis of these figures can be helpful in realizing the potential of these waters by applying our knowledge of mariculture combined with managerial talents.

NEW YORK--SHELLFISH PRODUCTION - 1967

ANNUAL SUMMARY

TOWNSHIP	HARD CLAMS Bushels		SOFT CLAMS Bushels		OYSTERS Bushels		BAY SCALLOPS Pounds		MUSSELS Bushels		RAZOR CLAMS Bushels		CONCHS Bushels	
	TOTAL	VALUE	RAKES	VALUE	DR	VALUE	DR	VALUE	T & R	VALUE	RAKES	VALUE	VAR. G	VALUE
Hempstead SS4A	18,875	222,715												
Oyster Bay SS4A	3,025	35,142	3,239	17,495										
Babylon SS4	51,388	661,027	3,188	16,903			72,033	100,832						
Islip SS4	183,795	2,461,881			905	14,277								
Brookhaven SS4	178,083	2,424,653			1,657	25,062								
Brookhaven SS6	2,410	29,710	950	5,278										
S. Hampton SS6	28,747	356,110	5,309	29,295	289	17,688					194	1,108		
S. Hampton 8	3,090	38,655					9,225	12,478	285	672				
E. Hampton 8	5,861	73,453	1,461	8,154			46,965	60,316	595	1,712	808	4,040		
Shelter Ils. 8	2,095	25,395					10,230	14,001						
Southold 8	36,179	196,327	625	3,541	652	10,068	23,591	30,390					5,092	18,343
Riverhead 8	1,365	16,615												
Brookhaven NS9	2,155	26,685												
Smithtown NS9	1,365	16,725							850	2,213				
Huntington NS9	41,474	376,412			5,192	81,710			846	2,842				
Oyster Bay NS9	28,946	129,693			4,789	71,879			10	33				
N. Hempstead NS9														
Unclassified			1,815	9,903									110	347
TOTAL	588,853	7,090,984	16,587	90,569	13,484	220,684	162,034	218,017	2,765	7,904	1,002	5,148	5,202	18,690
	7,066,232 lbs.		265,392 lbs.		161,030 lbs.		972,204 lbs.		27,650 lbs.		16,032 lbs.		78,030 lbs.	

(See New York Landings Bulletin - Area Code and Shellfish Conversion Factors)

Surf Clams	- 2,304,998 lbs.	$190,463
Sea Scallops	- 1,372,012 lbs.	$1,029,282

ANNUAL SUMMARY

TOWNSHIP	HARD CLAMS Bushels		SOFT CLAMS Bushels		OYSTERS Bushels		BAY SCALLOPS Pounds		MUSSELS Bushels		RAZOR CLAMS Bushels		CONCHS Bushels	
	TOTAL	VALUE	RAKES	VALUE	DR	VALUE	DR	VALUE	T & R	VALUE	RAKES	VALUE	VAR. G	VALUE
Hempstead SS4A	4,345	35,925	400	1,908										
Oyster Bay SS4A	2,250	20,750												
Babylon SS4	46,210	506,760	200	955										
Islip SS4	153,125	1,801,325			1,618	23,962	33,239	30,887						
Brookhaven SS4	186,078	2,205,356			3,813	58,004			418	565				
Brookhaven SS6	2,025	23,600	600	2,862							114	684		
S. Hampton SS6	24,751	270,497	14,902	72,533	534	5,184			5,489	7,570				
S. Hampton 8	3,325	35,675					54,107	53,862	600	784				
E. Hampton 8	7,168	78,973	400	1,908			97,029	104,697	923	1,520				
Shelter Is. 8	1,800	19,650					22,813	22,880						
Southold 8	37,881	179,446	232	1,115	6,698	94,166	108,222	109,186					1,676	6,341
Riverhead 8	2,312	23,744					2,000	1,850						
Brookhaven NS9	3,496	39,081	300	1,435										
Smithtown NS9	3,110	34,785	218	1,040					550	988				
Huntington NS9	38,251	343,061	200	955	4,395	60,627			3,510	6,366				
Oyster Bay NS9	32,305	170,345	200	955	6,489	93,832								
N. Hempstead NS9														
Unclassified														
TOTAL	548,432	5,788,343	17,652	85,666	23,547	335,775	317,410	323,362	11,490	17,793	114	684	1,676	6,341
	6,581,184 lbs.		282,432 lbs.		176,603 lbs.		1,904,460 lbs.		114,900 lbs.		1,824 lbs.		25,140 lbs.	

Sea Scallops - 2,127,685 lbs. - $1,008,637

Surf Clams - 108,244 bu. - $ 148,008

SHELLFISH PRODUCTION - POUNDS MEATS - 1968

TOWNSHIP	HARD CLAMS	SOFT CLAMS	OYSTERS	BAY SCALLOPS	MUSSELS	RAZOR CLAMS	CONCHS	VALUE
Hempstead	99,600	3,200						$ 57,900
Oyster Bay	262,500	1,600	67,725					306,678
Babylon	259,332	3,200						217,660
Islip	2,054,004	-	9,608	78,560				1,990,570
Brookhaven	1,804,872	12,800	21,000	8,000	77,190	5,344		1,848,072
South Hampton	254,196	173,553	101,003	50,925	64,980			470,520
East Hampton	41,904	4,800		142,423	4,650			150,046
Shelter Island	4,800			66,609				56,518
Southold	577,536			537,466			42,900	682,121
Riverhead	-			2,000				1,700
Smithtown	18,000	4,000			134,490			37,107
Huntington	570,888	2,400			14,000			497,206
TOTAL POUNDS	5,947,632*	205,553	199,336	886,043	295,310	5,344	42,900	$6,316,098

Atlantic Ocean - Surf Clams	1,505,240	lbs. Meats. . . .	$ 126,783
" " - Sea Scallops	2,917,153	" "	1,898,374
Seed Oysters	5,300	bushels	58,227

GRAND TOTAL $8,399,482

CONVERSION FACTOR - LBS. MEATS TO A BUSHEL

Hard Clams	12
Soft Clams	16
Oysters	7.5
Bay Scallops	6
Mussels	10
Razor Clams	16
Conchs	15
Surf Clams	17
Sea Scallops	6

* 495,636 bu.
$5,149,573

STATE OF NEW YORK CONSERVATION DEPARTMENT
BUREAU OF MARINE FISHERIES
OAKDALE, NEW YORK

SHELLFISH PRODUCTION IN POUNDS OF MEAT - 1964

TOWN	HARD CLAMS	SOFT CLAMS	MARKET OYSTERS	BAY SCALLOPS	MUSSELS	RAZOR CLAMS	CONCHS	VALUE
Babylon	410,160	1,600						$ 293,600
Brookhaven	1,465,452	12,800	25,088	86,000		5,856		1,460,173
E. Hampton	62,784	3,200		66,441				125,993
Hempstead	237,648	3,200						138,057
Huntington	778,224	1,600	50,387					718,917
Islip	1,137,012		14,250	149,414				1,107,620
N. Hempstead	-							-
Oyster Bay	524,052	1,600	33,930					379,742
Riverhead	11,100							9,150
Shelter Island	2,400			31,388				38,274
Smithtown	15,000	2,400						12,050
Southampton	245,400	154,432	10,103	32,552	124,950			301,598
Southold	513,060		79,710	321,301			40,950	678,524
Staten Island	-							-
TOTAL	5,402,292*	180,832	213,468	687,096	124,950	5,856	40,950	$5,263,698

ATLANTIC OCEAN: Surf Clams	1,217,676 lbs. meats	$ 108,852
ATLANTIC OCEAN: Sea Scallops	2,044,332 lbs. meats	1,114,682
Seedy Oysters	8,420 bushels	76,520
		$6,563,752

* 450,191 bushels
$4,135,545.

STATE OF NEW YORK CONSERVATION DEPARTMENT
BUREAU OF MARINE FISHERIES
OAKDALE, NEW YORK

SHELLFISH PRODUCTION IN POUNDS OF MEAT - 1963

TOWN	HARD CLAMS	SOFT CLAMS	MARKET OYSTERS	BAY SCALLOPS	MUSSELS	RAZOR CLAMS	CONCHS	TOTAL VALUE
Babylon	313,800	1,600						$ 174,296
Brookhaven	978,156	9,600	54,412		8,790	8,432		757,128
East Hampton	90,192	3,200		22,680			3,750	83,337
Hempstead	354,600	1,600						190,796
Huntington	1,720,920	800	7,005					1,331,499
Islip	560,676		30,000	6,798				431,911
N. Hempstead								-
Oyster Bay	833,160	800	36,885					540,787
Riverhead	8,544							6,320
Shelter Island	3,000			31,218				33,238
Smithtown	12,900	800						9,098
Southampton	301,800	76,992		21,894	65,550			257,981
Southold	133,284	3,200	266,166	219,784			18,570	674,955
Staten Island								-
TOTAL	5,311,032 *	98,592	394,468	302,374	74,340	8,432	22,320	$4,491,346

ATLANTIC OCEAN:	Surf Clams (includes 819,400 pounds of Meats Bait)	974,304 pounds	$ 90,524
	Sea Scallops (including New York City)	1,924,371 pounds	894,620
	Seed Oysters (Southampton)	3,200 bushels	14,400
			$5,490,890

* 442,586 bushels
$5,311,032

STATE OF NEW YORK CONSERVATION DEPARTMENT
BUREAU OF MARINE FISHERIES
FREEPORT, NEW YORK

SHELLFISH PRODUCTION IN POUNDS OF MEAT - 1962

TOWN	HARD CLAMS	SOFT CLAMS	MARKET OYSTERS	BAY SCALLOPS	MUSSELS	RAZOR CLAMS	CONCHS	TOTAL VALUE
Babylon	198,000	1,600						$ 99,461
Brookhaven	918,792	11,200	55,313		18,590	15,072		627,209
E. Hampton	44,100	1,600		253,628			3,735	212,115
Hempstead	204,600	800						119,580
Huntington	2,008,260	800	4,598					1,345,880
Islip	527,748		21,765	26,900				359,739
N. Hempstead	4,200							2,450
Oyster Bay	568,356	800	256,425					665,889
Riverhead	15,600							9,100
Shelter Island	4,500			79,499				60,691
Smithtown	22,500	800						13,355
Southhampton	252,000	72,544	4,500	79,234	8,680			233,544
Southold	67,560	3,200	386,445	548,616			14,250	1,016,110
Staten Island	-							-
TOTAL	4,836,216*	93,344	729,046	987,877	27,270	15,072	17,985	$4,165,123

ATLANTIC OCEAN:	Surf Clams (includes 782,000 pounds for bait)	839,460 pounds	$ 75,760
	Sea Scallops (including New York City)	2,718,230 pounds	1,097,228
	Seed Oysters (Southampton)	4,000 bushels	18,000
			$5,356,111

* 403,018 bushels
$2,926,249

STATE OF NEW YORK CONSERVATION DEPARTMENT
BUREAU OF MARINE FISHERIES
FREEPORT, NEW YORK

SHELLFISH PRODUCTION IN POUNDS OF MEAT - 1961

TOWN	HARD CLAMS	SOFT CLAMS	MARKET OYSTER	BAY SCALLOPS	MUSSELS	RAZOR CLAMS	CONCHS	TOTAL VALUE
Babylon	168,600	3,200						$ 98,816
Brookhaven	722,496	21,664	61,163	500	17,990	13,664		513,824
E. Hampton	22,200	2,400		147,031			5,295	117,245
Hempstead	127,080	1,600	8,250					85,454
Huntington	1,673,916	800	16,748					995,631
Islip	677,712		47,100	12,000				466,075
N. Hempstead	14,100							8,193
Oyster Bay	448,308	800	392,048					792,169
Riverhead	15,000		2,250					11,767
Shelter Island	8,400	800		64,916				50,533
Smithtown	21,600	800						12,762
Southampton	273,900	105,568	1,875	25,000				207,096
Southold	49,380	5,600	258,750	541,687			8,535	762,204
Staten Island	67,968							39,495
TOTAL	4,290,660*	143,232	788,184	791,134	17,990	13,664	13,830	$4,161,264

ATLANTIC OCEAN:	Surf Clams	(includes 701,046 pounds for bait)	722,189 pounds	64,379
	Sea Scallops	(including New York City)	3,020,444 pounds	1,116,830
				$5,342,473

* 357,555 bushels
$2,493,254

1967 PRODUCTION BY STATES -- VOLUME AND VALUE

	OYSTERS		HARD CLAMS		SOFT CLAMS		SURF CCLAMS	
	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
Maryland	16,440,623	$11,191,431	295,512	152,202	4,907,974	$1,511,348	1,149,194	106,368
Virginia (Potomac)	9,058,146	5,958,915	1,865,641	1,047,101	30,800	8,855		
Washington	5,535,000	2,210,000	275,000	135,000				
Texas	3,553,000	1,465,600*						
Louisiana	7,148,327	2,949,282						
Florida	4,754,180	1,961,100*	34,909	12,518*				
So. Carolina	2,255,476	846,937	15,489	5,961				
Mississippi	3,785,740	1,066,168						
No. Carolina	518,514	316,379	283,398	131,041				
Alabama	2,087,957	1,007,883						
California	E- 1,281 P- 26,757	3,330* 6,422*						
New Jersey	944,682	880,390	2,847,590	1,277,812	90,372	37,655	41,584,487	4,050,608
G-Connecticut	254,700	575,329	241,400	100,628				
Oregon	385,000	150,000						
Georgia	203,084	114,007						
New York	101,129	220,684	7,066,236	7,090,658	265,392	87,125	2,304,998	190,463
G-Massachusetts	60,000	160,377	1,389,700	1,061,409	990,000	677,981	16,500	4,512
Delaware	61,400	40,000	298,400	154,132				
Maine	4,100	4,432			3,176,209	1,478,777		
G-Rhode Island	4,000	5,237	1,268,100	786,501	41,100	22,569		
TOTALS	57,233,096	$31,133,903	15,881,375	$11,954,963	9,501,847	$3,824,310	45,055,179	$4,351,951

Source: Preliminary 1967 Production Courtesy Mr. Churchill Smith, BCF, Bayport, L.I., N. Y.

* Estimated Values

1966 PRODUCTION BY STATES -- VOLUME AND VALUE

	OYSTERS		HARD CLAMS		SOFT CLAMS		SURF CLAMS	
	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
Maryland	12,068,785	$7,861,846	171,763	95,894	7,006,872	$1,649,563	63,580	5,535
Virginia	9,232,821	6,741,326	1,859,128	994,046	398,040	86,715		
Washington*	7,835,300	2,050,000						
Texas	4,725,000	1,837,600						
Louisiana	4,622,686	1,944,995						
Florida	4,291,900	1,343,000	5,856	2,100				
So. Carolina	2,614,816	11,066,734	22,491	7,618				
Mississippi	2,235,385	597,324						
Alabama	1,304,314	606,538						
California (1)	E- 13,097 P- 787,502	34,052 189,000	2,124	1,380				
No. Carolina	724,265	398,884	280,147	112,059				
New Jersey	669,043	765,087	2,659,085	1,221,041	71,748	29,895	43,173,829	3,714,103
Connecticut	336,100	675,371	245,100	102,140	100	64		
Oregon	185,000	55,000						
Georgia	181,861	63,563						
New York	176,603	325,860	6,581,184	5,788,343	282,432	85,666	1,806,943	148,008
Massachusetts	62,800	162,639	1,322,800	1,097,245	1,038,500	675,556	35,300	8,032
Delaware	45,066	35,518	456,500	145,980				
Maine	4,118	4,972			3,008,203	1,387,246		
Rhode Island			1,604,760	799,418				
TOTALS	52,117,000	$26,162,000	15,210,000	$10,366,000	11,806,000	$3,915,000	45,080,000	$3,876,000

* 1965 Production and Volume

(1) Estimated Value

NEW YORK LANDINGS

MARINE DISTRICT

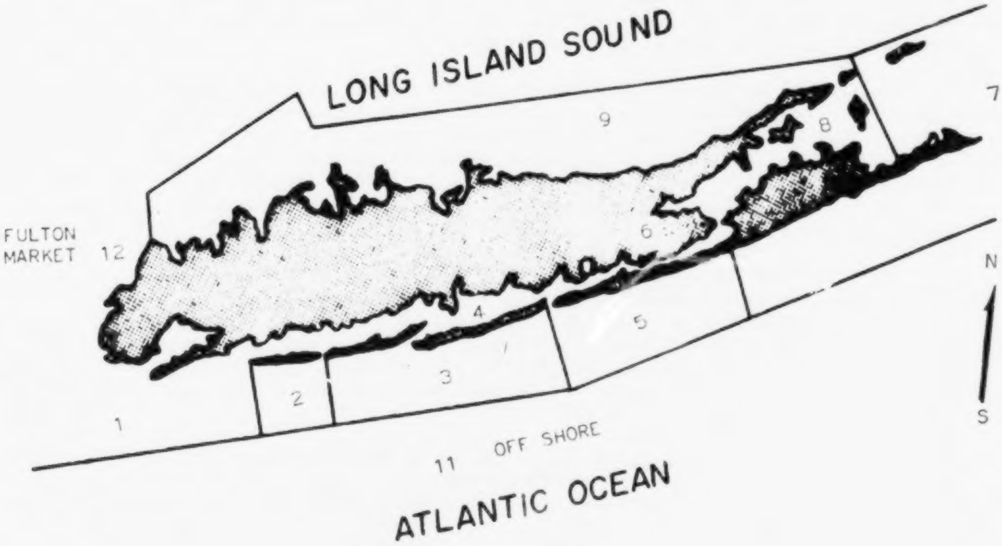
United States
Department of the Interior
Fish and Wildlife Service
Bureau of Commercial Fisheries
Washington, D. C. 20240

1967

New York
Conservation Department
Bureau of Marine Fisheries
Oakdale, N. Y. 11769

C. F. S. No. 4681 Annual Summary

NEW YORK MARINE DISTRICT



Landings of fish and shellfish in the Marine District of New York during 1967, exclusive of unclassified fish for reduction, amounted to 37.3 million pounds valued at $12.6 million. Compared with 1966 this was a decline of 42 percent in quantity, but an increase of 11 percent in value. The decrease in landings was due to the drop in landings of purse-seine caught menhaden and otter-trawl caught industrial fish.

FISHERIES OF NEW YORK, 1967

By Churchill T. Smith
Fishery Reporting Specialist
Bayport, L.I., New York

Landings of fish and shellfish in the Marine District of New York during 1967 declined 42 percent in quantity, but increased 11 percent in value. The decline in volume was due to the drop in landings of purse-seine caught menhaden and otter-trawl caught industrial fish.

Yellowtail flounders were the leading finfish species with landings of 5.5 million pounds. New York, not a yellowtail market, could absorb only a small quantity of this species. The majority was shipped south at considerably lower prices than New Bedford yellowtails. With continued effort on the yellowtail grounds, blackback landings declined. There was also a decline of fluke landings with only a short run during the season.

The fall run of whiting made it the dominant species in Brooklyn during the season. Landings were up from the previous year. There were no catch limits imposed during the season. Price fluctuated as usual, with low prices during the heavy run and high prices when in short supply.

Landings by inshore otter trawl vessels, as in the past few years, remained higher than the landings by the offshore vessels, due to the increased fishing effort expended on local flatfish and the drop in landings of scup and other offshore species.

Due to the decline of scup, which had been a big fall and winter fishery, there have been very few transient vessels landing at Fulton Market. Offshore otter-trawl lobster catches showed a slight increase in volume. The price of both pot and otter-trawl caught lobsters was extremely high all season, ranging from .80 to $1.20 per pound for selects. The pot caught lobster landings also increased throughout the area, and particularly in Long Island Sound.

Finfish landings at Fulton Market, New York City were comparable to the previous year. Scup landings were 1.3 million pounds of the total finfish landings of 1.8 million pounds. The majority of the finfish was landed during the first 3 months of the year. Sea scallop landings declined 756,000 pounds. Scallop prices ranged exceedingly high during the last two months of the year due to short supply from $1.05 - $1.20 per pound ex-vessel.

Number of vessels and trips landed at Fulton Market, 1965-67

Year	Vessels	Trips by Gear		
		Otter Trawls	Scallop Dredges	Total
	Number	Number	Number	Number
1967	37	107	135	242
1966	32	59	163	222
1965	40	102	191	293

Striped bass landings set an all-time record of 1.6 million pounds for the Marine District. The major catch was made in the late fall by the ocean haul seiners. Large schools of fish were observed with this run, indicating an abundant supply. The fish schooled around Montauk Point and the Sound affording ideal fishing for the hand liners. The

(Continued)

fish were about a month late in moving down the coast, and most of the haul-seine catch was made in early November. The pound net landings increased slightly, due to the catch by the small bay pounds of menhaden, mackerel, and striped bass. There was also a run of butterfish which had not occurred in some time. The gill-net catch of bluefish and striped bass increased during the fall season along the South Shore.

Hard clams were the leading species in both volume and value in New York. Landings were 7.1 million pounds, valued at $7.1 million. Great South Bay produced 68 percent of the hard clams in New York. A considerable quantity of transplanted clams were marketed from Long Island Sound this past year. Most of the transplanted clams were chowders.

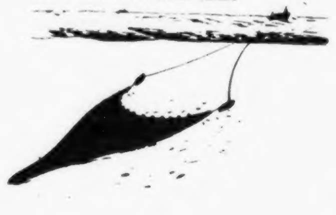
Surf clam production has shown a gradual increase due particularly to efforts of a few dredge boats. The beds are not extensive but will produce an ample supply for a few local boats. One new dredge boat was added in 1967 and another will be in operation in 1968. The demand for surf clams has exceeded the supply throughout the year.

Bay scallop production dropped to the lowest level of the last ten years. The 67 - 68 season production came out of Great South Bay, without this it would have been practically nil. Due to short supply, the average price was $1.40 per pound of meats. There was very little stock held over for freezing. Only a small quantity of New Jersey shell stock was shipped to New York for shucking because of the short supply in which also existed in the State. There is little indication that the production for next year will be any better.

Efforts to produce oysters from seed raised in "Greenhouses" continued, but the mortality is still very high. Experiments are also being conducted to produce an MSX free stock to plant in local waters. The conveyor dredge boats at West Sayville have been very successful in harvesting hard clams. Two new boats are being built to replace the wooden vessels now in operation.

A number of bills was proposed to the State Legislative Assembly relating to commercial fisheries. Among those were the following: a bill to prevent otter trawling within 2 nautical miles of any shore line in the Marine District; a bill to prevent the taking of menhaden by purse seines in Long Island Sound and making a sanctuary thereof; a bill changing the minimum size of striped bass from 14" to 16"; and a bill relating to the taking of striped bass. All these bills were killed in Committee.

An amendment to a bill removing the slat law of lobster or fish pots was presented and from all indications will be approved. This will eliminate the controversy on lobster and fish pots, which was a big problem last season.


ATLANTIC OTTER TRAWL

NEW YORK LANDINGS, 1967 AND 1966

Marine District

SPECIES	TOTAL			
	1967		1/ 1966	
	POUNDS	VALUE	POUNDS	VALUE
FISH				
ALEWIVES	-	-	4,188,000	$62,922
ANGLERFISH	27,810	$1,075	31,900	1,356
BLUEFISH	550,306	87,047	932,800	124,950
BONITO	5,595	478	1,800	263
BUTTERFISH	1,120,102	122,889	593,400	65,260
CARP	-	-	6,800	341
CATFISH	-	-	3,800	428
COD	457,391	62,632	247,300	36,382
EELS: COMMON	143,807	31,071	170,200	33,026
CONGER	2,600	84	6,300	194
FLOUNDERS: BLACKBACK	2,931,435	166,758	3,259,000	190,554
FLUKE	1,963,062	487,155	2,466,200	586,254
GRAY SOLE	8,138	765	24,000	2,685
LEMON SOLE	7,823	1,282	4,100	906
YELLOWTAIL	5,463,493	463,927	3,485,900	305,152
HADDOCK	25,997	2,309	21,500	3,054
HAKE: RED (LING)	519,422	25,256	397,300	11,750
WHITE	300	15	300	16
HERRING, SEA	146,960	7,807	6,407,000	101,845
KING WHITING OR (KINGFISH)	9,230	1,519	6,300	1,083
MACKEREL	360,231	25,541	399,800	27,059
MENHADEN	642,065	26,633	4,870,100	81,742
POLLOCK	1,500	186	800	86
SCUP OR PORGY	3,288,036	639,786	4,076,900	637,078
SEA BASS	109,310	35,791	220,900	59,064
SEA ROBIN	64,423	3,099	41,000	1,599
SEA TROUT (WEAKFISH)	29,902	5,934	26,100	4,816
SHAD	34,428	6,102	80,600	10,653
SHARK: GRAYFISH (DOGFISH)	196,537	9,442	180,100	7,722
UNCLASSIFIED	1,410	75	900	56
SILVERSIDES	144,740	25,615	176,200	28,855
SKATES (RAJAFISH)	10,668	283	20,400	692
STRIPED BASS	1,575,377	301,588	1,050,300	193,483
STURGEON	11,161	1,760	16,000	3,532
SUCKERS	-	-	600	60
SWELLFISH	69,690	3,944	225,900	11,019
SWORDFISH	2,182	698	83,100	35,200
TAUTOG	81,007	3,781	76,400	3,517
TILEFISH	18,005	1,857	121,300	16,792
TUNA: BLUEFIN	3,178	650	1,600	171
LITTLE (ALBACORE)	14,228	1,138	30,200	3,566
WHITE PERCH	80,300	13,643	60,600	9,343
WHITING	3,884,816	212,444	2,008,200	89,011
UNCLASSIFIED: FOR FOOD	297,297	29,731	357,400	35,744
BAIT, REDUCTION, AND ANIMAL FOOD	-	-	14,299,700	121,542
TOTAL FISH	24,303,962	2,811,790	50,679,000	2,910,823
SHELLFISH				
LOBSTERS, NORTHERN	879,026	835,633	729,700	613,481
CLAM MEATS: HARD	7,066,236	7,090,658	6,581,000	5,788,380
RAZOR	16,032	5,148	1,800	684
SOFT	265,392	87,125	282,400	85,666
SURF	2,304,998	190,463	1,840,100	148,008
CONCH MEATS	78,030	18,690	25,100	6,341
MUSSEL MEATS, SEA	27,650	7,904	114,900	17,793
OYSTER MEATS	101,129	220,684	176,600	335,775
SCALLOP MEATS, EDIBLE:				
BAY	162,034	218,017	317,400	323,362
SEA	1,372,012	1,029,282	2,127,600	1,008,637
SQUID	771,574	57,589	1,237,500	109,704
TOTAL SHELLFISH	13,044,113	9,761,193	13,434,100	8,437,831
GRAND TOTAL	37,348,075	12,572,983	64,113,100	11,348,654

1/ REVISED. NOTE: DATA FOR 1967 DO NOT INCLUDE UNCLASSIFIED FISH AND PURSE-SEINE CAUGHT MENHADEN FOR REDUCTION. THE 1966 TOTAL INCLUDES A CATCH FROM THE HUDSON RIVER AREA TOTALING 133,228 POUNDS VALUED AT $16,988 CONSISTING OF SHAD 67,908 POUNDS, STRIPED BASS 44,342 POUNDS, AND OTHER SPECIES 20,978 POUNDS.

NEW YORK CATCH BY GEAR, 1967

SPECIES	OTTER TRAWLS		POUND NETS	HAUL SEINES	GILL NETS	POTS
	INSHORE	OFFSHORE				
FISH	POUNDS	POUNDS	POUNDS	POUNDS	POUNDS	POUNDS
ANGLERFISH	27,810	-	-	-	-	-
BLUEFISH	19,026	3,565	72,831	168,348	207,561	-
BONITO	-	-	3,532	-	2,063	-
BUTTERFISH	328,583	617,190	174,329	-	-	-
COD	180,495	69,475	-	2,415	-	-
EELS: COMMON	-	-	59,942	-	-	34,850
CONGER	400	2,200	-	-	-	-
FLOUNDERS: GRAY SOLE	-	8,138	-	-	-	-
LEMON SOLE	-	7,823	-	-	-	-
BLACKBACK	2,200,086	630,374	39,550	-	-	-
YELLOWTAIL	2,354,993	3,083,500	-	-	-	-
FLUKE	1,680,650	238,840	15,174	-	-	-
HADDOCK	-	25,997	-	-	-	-
HAKE: RED (LING)	497,132	15,920	-	-	-	6,370
WHITE	-	300	-	-	-	-
HERRING, SEA	35,575	-	111,385	-	-	-
KING WHITING (KINGFISH)	838	-	6,492	1,900	-	-
MACKEREL	69,741	30,605	191,985	-	4,350	-
MENHADEN	-	-	535,220	87,500	19,345	-
POLLOCK	-	1,200	-	-	-	-
SCUP OR PORGY	931,427	1,853,666	125,413	242,375	540	-
SEA BASS	25,885	16,725	1,740	-	-	64,960
SEA ROBIN	17,600	-	46,823	-	-	-
SEA TROUT (WEAKFISH)	10,891	300	17,043	1,400	268	-
SHAD	3,660	-	25,768	5,000	-	-
SHARKS: GRAYFISH (DOGFISH)	133,390	12,700	45,997	-	450	1,100
UNCLASSIFIED	680	600	130	-	-	-
SKATES (RAJAFISH)	7,941	1,200	1,527	-	-	-
SPEARING (SILVERSIDES)	-	-	26,500	118,240	-	-
STRIPED BASS	144,775	1,650	86,910	1,042,155	214,212	-
STURGEON	9,240	1,054	640	-	227	-
SWELLFISH (BLOWFISH)	5,976	-	63,714	-	-	-
TAUTOG (BLACKFISH)	45,858	240	34,909	-	-	-
TILEFISH	-	18,005	-	-	-	-
TUNA: BLUEFIN	-	-	1,165	-	-	-
LITTLE (ALBACORE)	-	-	13,900	-	328	-
WHITING	3,727,602	150,444	6,770	-	-	-
WHITE PERCH	-	-	2,500	77,800	-	-
UNCLASSIFIED, FOR FOOD	196,995	37,420	19,397	19,200	5,910	9,150
TOTAL FISH	12,657,249	6,829,131	1,731,286	1,766,333	455,254	116,430
SHELLFISH						
LOBSTERS, NORTHERN	3,462	281,038	-	-	-	593,726
SQUID	327,976	337,255	106,343	-	-	-
TOTAL SHELLFISH	331,438	618,293	106,343	-	-	593,726
GRAND TOTAL	12,988,687	7,447,424	1,837,629	1,766,333	455,254	710,156

SEE NOTE ON PAGE 4.

HAUL SEINE

NEW YORK CATCH BY GEAR, 1967 - Continued

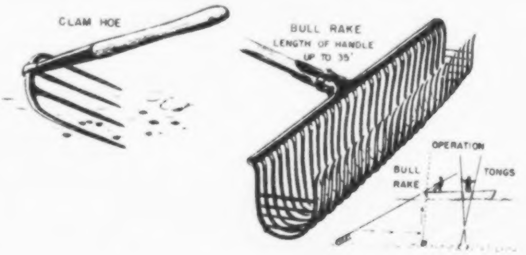
SPECIES	FYKE NETS	LINES	DREDGES	OTHER GEAR
FISH	POUNDS	POUNDS	POUNDS	POUNDS
BLUEFISH	-	78,975	-	-
COD	-	205,006	-	-
EELS, COMMON	-	-	-	49,015
FLOUNDERS: BLACKBACK	41,125	-	-	20,300
YELLOWTAIL	-	-	-	25,000
FLUKE	-	-	-	28,398
MACKEREL	-	63,550	-	-
POLLOCK	-	300	-	-
SCUP OR PORGY	-	134,615	-	-
SHARKS, GRAYFISH (DOGFISH)	600	2,300	-	-
STRIPED BASS	-	85,675	-	-
SWORDFISH	-	2,182	-	-
TUNA, BLUEFIN	-	2,013	-	-
UNCLASSIFIED, FOR FOOD	1,100	7,925	-	200
TOTAL FISH	42,825	582,541	-	122,913
SHELLFISH				
LOBSTERS, NORTHERN	-	-	-	800
CLAM MEATS: HARD	-	-	2,662,404	4,403,832
RAZOR	-	-	-	16,032
SOFT	-	-	-	265,392
SURF	-	-	2,304,998	-
CONCH MEATS	-	-	31,755	46,275
MUSSEL MEATS, SEA	-	-	-	27,650
OYSTER MEATS	-	-	98,959	2,170
SCALLOP MEATS, EDIBLE: BAY	-	-	162,034	-
SEA	-	-	1,372,012	-
TOTAL SHELLFISH	-	-	6,632,162	4,762,151
GRAND TOTAL	42,825	582,541	6,632,162	4,885,064

SEE NOTE ON PAGE 4.

CONVERSION FACTORS USED IN PREPARING THIS REPORT

SPECIES	DATA COLLECTED AS	CONVERTED TO AND PUBLISHED IN POUNDS AS	BY MULTIPLYING BY
CRABS, BLUE, HARD	NEW YORK & U.S. STANDARD BUSHELS	ROUND WEIGHT	35
CLAMS: HARD	DO	MEATS	12
RAZOR	DO	DO	16
SOFT	DO	DO	16
SURF	DO	DO	17
CONCHS	DO	DO	15
MUSSELS, SEA	DO	DO	10
OYSTERS	DO	DO	7.5
SCALLOPS: BAY	GALLONS OF MEATS	EDIBLE MEATS	9
SEA	DO	DO	9

Atlantic Coast

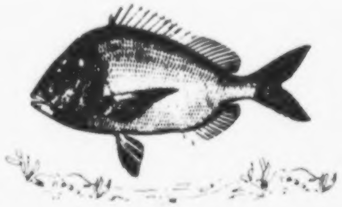


NEW YORK LANDINGS BY AREA, 1967

SPECIES	AREA 1 OCEAN, NEW JERSEY BOUNDARY TO EAST ROCKAWAY	AREA 2 OCEAN, EAST ROCKAWAY INLET TO JONES INLET	AREA 3 OCEAN, JONES INLET TO MORICHES INLET	AREA 4 GREAT SOUTH BAY	AREA 5 OCEAN, MORICHES INLET TO SHINNECOCK INLET	AREA 6 MORICHES AND SHINNECOCK BAYS
FISH	POUNDS	POUNDS	POUNDS	POUNDS	POUNDS	POUNDS
ANGLERFISH	15,400	300	710	-	5,700	-
BLUEFISH	36,925	55,625	105,595	7,200	50,680	30,425
BONITO	-	-	5,333	-	-	-
BUTTERFISH	77,265	7,000	118,010	3,350	27,000	-
COD	64,415	91,250	28,340	-	56,606	-
EELS: COMMON	3,400	-	-	24,390	-	102,175
CONGER	400	-	-	-	-	-
FLOUNDERS: BLACKBACK	76,200	126,475	224,877	2,500	358,165	46,750
YELLOWTAIL	32,750	98,200	733,123	-	754,375	-
FLUKE	142,905	167,655	211,785	1,201	572,220	9,597
HAKE, RED (LING)	457,660	26,795	9,657	-	9,390	-
HERRING, SEA	25,700	800	116,180	-	750	-
KING WHITING (KINGFISH)	-	-	838	-	-	-
MACKEREL	96,300	21,630	158,320	-	-	-
MENHADEN	-	-	32,745	-	-	-
SCUP OR PORGY	75,395	43,050	84,154	-	86,895	-
SEA BASS	7,510	27,450	2,710	-	34,550	-
SEA ROBIN	-	15,300	30,600	-	-	-
SEA TROUT (WEAKFISH)	-	-	1,359	-	-	-
SHAD	3,660	-	23,645	-	-	-
SHARKS: GRAYFISH (DOGFISH)	46,440	16,500	450	-	35,800	-
UNCLASSIFIED	225	-	155	-	-	-
SKATES (RAJAFISH)	400	-	2,541	-	800	-
SPEARING (SILVERSIDES)	-	-	-	-	-	5,500
STRIPED BASS	9,195	39,720	96,962	3,150	228,525	13,700
STURGEON	-	-	1,377	-	460	-
SWELLFISH	-	-	5,976	-		-
TAUTOG (BLACKFISH)	-	-	1,440	-	12,075	-
TUNA: BLUEFIN	2,013	-	1,165	-	-	-
LITTLE (ALBACORE)	-	-	14,228	-	-	-
WHITING	3,177,895	337,600	48,027	-	70,450	-
WHITE PERCH	-	-	-	2,500	-	28,800
UNCLASSIFIED, FOR FOOD	64,190	41,025	15,435	-	34,850	700
TOTAL FISH	4,416,243	1,116,375	2,075,737	44,291	2,339,291	237,647
SHELLFISH						
LOBSTERS, NORTHERN	37,486	24,100	3,462	-	199,395	-
CLAM MEATS: HARD	-	-	-	4,959,192	-	373,884
RAZOR	-	-	-	-	-	3,104
SOFT	-	-	-	51,008	-	100,144
SURF	162,947	510,527	1,612,518	-	16,014	-
MUSSEL MEATS, SEA	-	-	-	-	-	2,850
OYSTER MEATS	-	-	-	19,214	-	2,170
SCALLOP MEATS, EDIBLE, BAY	-	-	-	72,023	-	-
SQUID	88,940	4,200	45,626	-	106,820	-
TOTAL SHELLFISH	289,373	538,827	1,661,606	5,101,437	322,229	482,152
GRAND TOTAL	4,705,616	1,655,202	3,737,343	5,145,728	2,661,520	719,799

SEE NOTE ON PAGE 4.

SCUP OR PORGY



NEW YORK LANDINGS BY AREA, 1967 - Continued

SPECIES	AREA 7 OCEAN, SHINNECOCK INLET TO MONTAUK, INC. BLOCK ISLAND SOUND	AREA 8 GARDINERS, PECONIC, AND ADJOINING BAYS	AREA 9 LONG ISLAND SOUND	AREA 10 UNCLASSIFIED	AREA 11 OCEAN, OUTSIDE 3-MILE LIMIT	AREA 12 FULTON MARKET LANDINGS
FISH	POUNDS	POUNDS	POUNDS	POUNDS	POUNDS	POUNDS
ANGLERFISH	5,700	-	-	-	-	-
BLUEFISH	199,904	36,314	24,073	-	2,465	1,100
BONITO	-	-	262	-	-	-
BUTTERFISH	137,433	91,945	40,909	-	442,190	175,000
COD	147,305	-	-	-	69,285	190
EELS: COMMON	-	13,742	100	-	-	-
CONGER	-	-	-	-	700	1,500
FLOUNDERS: GRAY SOLE	-	-	-	-	4,538	3,600
LEMON SOLE	-	-	-	-	7,823	
BLACKBACK	1,168,524	172,540	106,730	-	627,074	21,600
YELLOWTAIL	710,545	26,000	-	-	3,053,700	54,800
FLUKE	546,890	21,822	32,547	-	211,640	44,800
HADDOCK	-	-	-	-	25,997	-
HAKE: RED (LING)	-	-	-	-	3,120	12,800
WHITE	-	-	-	-	300	-
HERRING, SEA	1,100	200	2,230	-	-	-
KING WHITING (KINGFISH)	1,900	3,542	2,950	-	-	-
MACKEREL	9,100	26,609	17,667	-	2,005	28,600
MENHADEN	87,500	386,180	135,640	-	-	-
POLLOCK	300	-	-	-	1,200	-
SCUP OR PORGY	422,750	682,989	89,137	-	501,586	1,302,080
SEA BASS	15,358	3,395	1,612	-	9,925	6,800
SEA ROBIN	2,300	11,603	4,620	-	-	-
SEA TROUT (WEAKFISH)	2,160	16,240	9,843	-	-	300
SHAD	2,500	4,395	228	-	-	-
SHARKS: GRAYFISH (DOGFISH)	34,100	24,896	25,651	-	12,700	-
UNCLASSIFIED	300	-	130	-	500	100
SKATES (RAJAFISH)	4,200	-	1,527	-	1,200	-
SPEARING (SILVERSIDES	-	-	-	139,240	-	-
STRIPED BASS	1,045,890	31,979	104,606	-	1,650	-
STURGEON	3,680	640	3,950	-	1,054	-
SWELLFISH (BLOWFISH)	-	35,754	27,960	-	-	-
SWORDFISH	-	-	-	-	-	2,182
TAUTOG (BLACKFISH)	20,575	23,717	22,960	-	240	-
TILEFISH	-	-	-	-	12,605	5,400
WHITING	65,200	35,200	-	-	29,144	121,300
WHITE PERCH	-	-	-	49,000	-	-
UNCLASSIFIED, FOR FOOD	50,820	35,970	16,687	-	37,420	200
TOTAL FISH	4,686,034	1,685,672	672,019	188,240	5,060,061	1,782,352
SHELLFISH						
LOBSTERS, NORTHERN	151,856	-	180,889	-	267,938	13,900
CLAM MEATS: HARD	-	583,080	887,280	262,800	-	-
RAZOR	-	12,928	-	-	-	-
SOFT	-	33,376	-	80,864	-	-
SURF	-	2,992	-	-	-	-
CONCH MEATS	-	76,380	-	1,650	-	-
MUSSEL MEATS, SEA	-	5,950	17,060	1,790	-	-
OYSTER MEATS	-	4,890	74,855	-	-	-
SCALLOP MEATS, EDIBLE:						
BAY	-	90,011		-	-	-
SEA	-	-	-	-	166,706	1,205,306
SQUID	68,125	53,704	66,904	-	101,055	236,200
TOTAL SHELLFISH	219,981	863,311	1,226,988	347,104	535,699	1,455,406
GRAND TOTAL:	4,906,015	2,548,983	1,899,007	535,344	5,595,760	3,237,758

SEE NOTE ON PAGE 4.

NEW YORK LANDINGS BY MONTHS, 1967

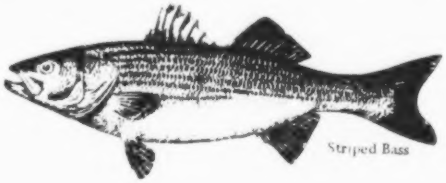
SPECIES	JANUARY		FEBRUARY		MARCH	
	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
FISH						
ANGLERFISH	3,500	$140	545	$22	965	$39
BUTTERFISH	27,510	3,301	158,475	19,017	227,805	18,224
COD	74,220	10,391	32,160	7,075	49,452	8,902
EELS: COMMON	5,600	1,120	2,800	504	5,700	1,425
CONGER	400	16	800	32	-	-
FLOUNDERS: GRAY SOLE	-	-	125	25	-	-
BLACKBACK	312,392	25,023	156,897	18,827	269,809	16,165
YELLOWTAIL	844,973	101,397	334,179	53,469	564,769	50,829
FLUKE	19,015	4,944	5,403	1,620	6,406	1,409
HAKE, RED (LING)	109,950	4,358	55,900	2,236	39,200	2,352
HERRING, SEA	3,700	222	6,000	360	4,700	282
POLLOCK	400	32	-	-	-	-
SCUP OR PORGY	115,750	37,040	163,910	52,451	304,590	54,826
SHAD	2,210	332	1,450	232	-	-
SHARKS, GRAYFISH (DOGFISH)	15,900	636	18,200	728	10,900	436
SKATES (RAJAFISH)	888	18	-	-	400	8
SPEARING (SILVERSIDES)	11,740	2,700	5,300	954	2,300	690
STURGEON	118	24	-	-	-	-
TAUTOG (BLACKFISH)	300	12	-	-	-	-
TILEFISH	100	8	-	-	-	-
WHITING	792,114	47,526	502,800	25,140	539,100	26,955
WHITE PERCH	1,400	224	500	75	1,200	144
UNCLASSIFIED, FOR FOOD	15,650	1,565	17,290	1,729	19,175	1,918
TOTAL FISH	2,356,830	241,029	1,462,734	184,496	2,046,471	184,604
SHELLFISH						
LOBSTERS, NORTHERN	9,800	9,800	5,320	5,320	6,600	6,270
CLAM MEATS: HARD	412,392	382,937	318,576	291,767	461,724	463,464
RAZOR	2,208	828	-	-	8,912	2,785
SOFT	20,592	6,435	11,872	1,379	26,064	10,588
SURF	148,869	11,966	91,392	7,342	168,980	13,456
CONCH MEATS	2,385	715	1,305	392	5,010	1,169
MUSSEL MEATS, SEA	1,720	516	5,440	1,904	2,700	945
OYSTER MEATS	18,922	51,810	10,342	21,914	6,645	14,053
SCALLOP MEATS, EDIBLE:						
BAY	20,476	22,523	8,157	9,788	3,897	3,897
SEA	70,600	49,090	70,072	53,255	100,650	76,494
SQUID	56,270	3,376	44,380	3,995	72,330	4,340
TOTAL SHELLFISH	764,234	539,996	566,856	397,056	863,512	597,461
GRAND TOTAL	3,121,064	781,025	2,029,590	581,552	2,909,983	782,065

SEE NOTE ON PAGE 12.

NEW YORK LANDINGS BY MONTHS, 1967 - Continued

SPECIES	APRIL		MAY		JUNE	
	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
FISH						
ANGLERFISH	2,500	$100	7,200	$288	1,900	$76
BLUEFISH	-	-	8,200	1,312	82,683	13,229
BONITO	-	-	-	-	3,270	262
BUTTERFISH	102,425	8,194	55,445	7,762	185,137	22,216
COD	32,205	3,864	57,366	6,884	10,085	1,210
EELS: COMMON	4,700	1,034	5,400	864	13,475	2,425
CONGER	300	6	700	14	-	-
FLOUNDERS: GRAY SOLE	688	55	5,555	444	792	95
LEMON SOLE	-	-	-	-	583	47
BLACKBACK	274,870	10,994	660,588	26,423	448,282	26,896
YELLOWTAIL	510,865	40,869	451,510	31,606	235,540	18,843
FLUKE	12,300	3,198	35,348	7,776	757,766	181,864
HADDOCK	300	42	600	72	1,000	90
HAKE, RED (LING)	39,725	2,384	48,070	2,884	15,559	622
HERRING, SEA	26,800	1,608	22,960	918	50,700	2,535
KING WHITING (KINGFISH)	-	-	435	65	602	90
MACKEREL	4,185	670	118,294	9,464	154,544	9,273
MENHADEN	52,125	2,085	445,895	17,836	96,540	3,862
SCUP OR PORGY	408,150	57,141	574,652	68,958	301,610	36,193
SEA BASS	5,575	1,952	10,570	3,171	25,964	7,789
SEA ROBIN	-	-	11,790	472	15,453	618
SEA TROUT (WEAKFISH)	300	45	900	135	1,817	363
SHAD	1,400	252	23,540	4,237	5,828	1,049
SHARKS, GRAYFISH (DOGFISH)	10,500	525	15,060	904	27,754	1,110
SKATES (RAJAFISH)	270	5	253	5	1,750	35
SPEARING (SILVERSIDES)	100	35	300	45	2,900	435
STRIPED BASS	-	-	116,821	16,355	94,229	19,788
STURGEON	100	20	700	154	2,592	415
SWELLFISH (BLOWFISH)	-	-	-	-	16,744	1,005
TAUTOG (BLACKFISH)	-	-	12,298	492	14,653	586
TILEFISH	1,400	168	9,010	1,081	5,295	424
WHITING	154,265	12,341	510,335	40,827	124,582	14,950
WHITE PERCH	3,400	510	15,500	2,325	7,800	624
UNCLASSIFIED, FOR FOOD	23,200	2,320	18,650	1,865	42,150	4,215
TOTAL FISH	1,672,648	150,417	3,243,945	255,638	2,749,579	373,234
SHELLFISH						
LOBSTERS, NORTHERN	22,170	24,387	45,898	50,487	130,488	123,964
CLAM MEATS: HARD	484,848	480,022	566,748	577,531	750,372	799,460
RAZOR	1,904	595	3,008	940	-	-
SOFT	23,232	7,986	19,328	6,040	28,704	9,868
SURF	198,630	15,965	232,050	18,677	247,469	20,321
CONCH MEATS	4,785	1,116	3,930	850	10,185	2,376
MUSSEL MEATS, SEA	1,070	349	350	113	250	82
OYSTER MEATS	1,500	3,200	1,365	2,912	-	-
SCALLOP MEATS, EDIBLE, SEA	152,343	96,736	166,681	101,675	170,951	111,118
SQUID	97,370	5,842	141,391	8,485	89,527	7,162
TOTAL SHELLFISH	987,852	636,200	1,180,749	767,710	1,427,946	1,074,351
GRAND TOTAL	2,660,500	786,617	4,424,694	1,023,348	4,177,525	1,447,585

SEE NOTE ON PAGE 12.


Striped Bass

NEW YORK LANDINGS BY MONTHS, 1967 - Continued

SPECIES	JULY		AUGUST		SEPTEMBER	
FISH	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
ANGLERFISH	1,200	$48	2,100	$84	1,900	$38
BLUEFISH	96,054	17,290	199,340	25,914	100,746	18,134
BONITO	-	-	163	23	2,022	182
BUTTERFISH	98,598	15,775	67,881	8,146	60,008	7,200
COD	2,500	200	4,970	298	11,930	1,908
EELS, COMMON	11,440	2,174	7,200	1,584	18,200	4,004
FLOUNDERS: GRAY SOLE	478	72	100	10	-	-
LEMON SOLE	575	40	4,605	783	2,060	412
BLACKBACK	95,060	3,802	62,115	3,727	95,616	7,649
YELLOWTAIL	409,460	28,662	363,447	29,075	310,595	18,635
FLUKE	265,604	69,057	297,166	77,263	415,915	99,820
HADDOCK	1,320	106	6,105	488	12,240	979
HAKE, RED (LING)	7,910	316	5,600	336	300	15
HERRING, SEA	14,300	858	300	15	2,000	120
KING WHITING (KINGFISH)	535	80	3,218	644	4,100	575
MACKEREL	8,983	1,078	1,679	134	38,405	2,304
MENHADEN	43,140	2,588	4,365	262	-	-
SCUP OR PORGY	498,968	89,814	263,526	73,787	157,807	36,295
SEA BASS	23,959	8,385	13,062	4,572	4,932	1,726
SEA ROBIN	9,375	375	8,875	710	7,430	594
SEA TROUT (WEAKFISH)	4,346	869	5,244	1,363	11,745	1,762
SHARKS: GRAYFISH (DOGFISH)	26,630	1,598	14,587	583	16,159	808
UNCLASSIFIED	-	-	460	28	50	2
SKATES (RAJAFISH)	2,740	55	555	27	1,732	69
SPEARING (SILVERSIDES)	2,600	390	11,000	1,650	21,000	3,150
STRIPED BASS	120,895	27,806	95,568	26,765	179,741	46,732
STURGEON	2,200	308	772	116	1,297	259
SWELLFISH (BLOWFISH)	18,288	1,097	11,848	474	13,838	830
SWORDFISH	-	-	-	-	2,182	698
TAUTOG (BLACKFISH)	20,290	1,015	12,548	502	8,890	356
TILEFISH	2,200	176	-	-	-	-
TUNA: BLUEFIN	-	-	500	60	-	-
LITTLE (ALBACORE)	-	-	-	-	14,228	1,138
WHITING	7,310	877	18,000	1,440	9,920	793
WHITE PERCH	-	-	-	-	4,000	800
UNCLASSIFIED, FOR FOOD	37,645	3,765	24,950	2,495	23,200	2,320
TOTAL FISH	1,834,603	278,676	1,511,869	263,358	1,554,188	260,307
SHELLFISH						
LOBSTERS, NORTHERN	191,293	181,738	267,285	253,920	120,926	108,833
CLAM MEATS: HARD	936,376	1,005,247	961,464	989,138	694,488	729,210
SOFT	46,944	16,137	30,416	9,980	27,344	8,545
SURF	228,701	18,976	221,357	18,452	178,687	14,847
CONCH MEATS	6,525	1,958	6,630	1,547	4,710	1,099
MUSSEL MEATS, SEA	220	72	600	195	250	69
OYSTER MEATS	-	-	-	-	11,062	22,125
SCALLOP MEATS, EDIBLE: BAY	-	-	-	-	5,034	7,551
SEA	169,097	108,226	118,308	86,365	92,026	73,620
SQUID	92,506	4,625	75,990	6,079	18,935	3,030
TOTAL SHELLFISH	1,673,662	1,336,969	1,682,050	1,365,676	1,153,462	968,929
GRAND TOTAL	3,508,265	1,615,645	3,193,919	1,629,034	2,707,650	1,229,236

SEE NOTE ON PAGE 12.

NEW YORK LANDINGS BY MONTHS, 1967 - Continued

SPECIES	OCTOBER		NOVEMBER		DECEMBER	
FISH	POUNDS	VALUE	POUNDS	VALUE	POUNDS	VALUE
ANGLERFISH	2,600	$104	3,000	$120	400	$16
BLUEFISH	55,833	10,050	7,450	1,118	-	-
BONITO	140	11	-	-	-	-
BUTTERFISH	74,923	6,743	56,197	5,057	5,698	1,254
COD	30,285	3,634	72,595	8,711	79,623	9,555
EELS: COMMON	34,192	7,864	25,200	5,796	9,900	2,277
CONGER	400	16	-	-	-	-
FLOUNDERS: GRAY SOLE	-	-	-	-	400	64
BLACKBACK	75,347	3,767	267,089	10,683	213,370	12,802
YELLOWTAIL	572,630	34,358	440,280	26,417	425,245	29,767
FLUKE	120,660	33,784	17,429	4,008	10,050	2,412
HADDOCK	2,085	250	1,182	165	1,165	117
HAKE: RED (LING)	3,227	194	106,984	4,279	87,997	5,280
WHITE	300	15	-	-	-	-
HERRING, SEA	4,100	205	11,400	684	-	-
KING WHITING (KINGFISH)	165	30	175	35	-	-
MACKEREL	5,661	340	26,380	2,110	2,100	168
POLLOCK	-	-	-	-	1,100	154
SCUP OR PORGY	233,423	56,021	129,145	33,578	136,505	43,682
SEA BASS	12,810	3,843	10,588	3,705	1,850	648
SEA ROBIN	2,400	96	6,500	130	2,600	104
SEA TROUT (WEAKFISH)	4,790	1,245	760	152	-	-
SHARKS: GRAYFISH (DOGFISH)	7,207	432	15,125	756	18,515	926
UNCLASSIFIED	500	25	400	20	-	-
SKATES (RAJAFISH)	470	24	225	9	1,385	28
SPEARING (SILVERSIDES)	17,300	3,460	26,500	4,240	43,700	7,866
STRIPED BASS	415,005	95,451	529,898	63,587	23,200	5,104
STURGEON	1,442	173	1,940	291	-	-
SWELLFISH (BLOWFISH)	8,972	538	-	-	-	-
TAUTOG	5,357	428	4,771	238	1,900	152
TUNA, BLUEFIN	2,678	590	-	-	-	-
WHITING	12,886	644	758,617	22,764	454,687	18,187
WHITE PERCH	10,125	2,531	19,075	3,815	17,300	2,595
UNCLASSIFIED, FOR FOOD	27,665	2,766	15,477	1,548	32,245	3,225
TOTAL FISH	1,745,578	269,632	2,554,582	204,016	1,570,935	146,383
SHELLFISH						
LOBSTERS, NORTHERN	61,544	55,390	9,752	8,776	7,950	6,758
CLAM MEATS: HARD	561,972	543,931	465,672	412,241	449,604	415,710
SOFT	14,528	4,540	10,800	3,713	5,568	1,914
SURF	229,381	19,407	182,325	15,531	177,157	15,523
CONCH MEATS	26,610	6,209	4,725	992	1,230	267
MUSSEL MEATS, SEA	300	83	5,150	1,416	9,600	2,160
OYSTER MEATS	20,678	41,355	16,110	32,063	14,505	31,252
SCALLOP MEATS, EDIBLE: BAY	26,812	37,536	59,344	83,082	38,314	53,640
SEA	83,166	71,522	83,754	87,942	94,364	113,237
SQUID	42,200	6,330	26,775	3,213	13,900	1,112
TOTAL SHELLFISH	1,067,191	786,303	864,407	648,969	812,192	641,573
GRAND TOTAL	2,812,769	1,055,935	3,418,989	852,985	2,383,127	787,956

NOTE: MONTHLY DATA DO NOT INCLUDE THE CATCH OF UNCLASSIFIED FISH FOR REDUCTION, AND PURSE-SEINE CAUGHT MENHADEN.

Created in 1849, the Department of the Interior—a department of conservation—is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

CHAIRMAN KLASHMAN: Mrs. Wallace, as usual, thank you very much for a very wonderful statement.

I now call on Mrs. Payne.

MRS. PAYNE: I should like to say that I have prepared a statement which I will mail in with several other pieces of literature (Editors Note: See Part II). I have worked on the sewage plant problem, the North River, for a matter of 3 years, and have worked very closely with Mr. Ryan on it. There are one or two things that I would like to clear up, because I think there are people here who feel that maybe our chief concern or beef is that they are building the plant. It isn't a case of just building the plant.

One of our chief concerns is, number one, the very close proximity to residential areas. Now the engineering reports show that this plant will be 400 feet from the closest house. Believe me, we are all agreed that the Hudson River is polluted. The Hudson River must be cleaned. But we also are thoroughly agreed that this plant might not necessarily be the vehicle for doing it.

Now I was in a conference with many people, with the late Commissioner Holts, on April 23, and he said at that time that the most that this plant would achieve would be from 55 to 70%. Then I find, on May 16, the Federal Government has given the city money to go ahead. I was wondering what had happened to the Federal Government's own policy -- had you decided to downgrade your own policy and therefore downgrade the Hudson River to a second-class stream when you would be abrogating your own 90% rule? That's the main thing I want to say.

CHAIRMAN KLASHMAN: The answer to your question was given by Mr. Glenn, in that the plant actually will be achieving the 90% that the water quality calls for in this fine bill.

MRS. PAYNE: I have asked Dr. Eisenbud if he would give me the plan so I can look at it.

The following statement has been prepared for submission before the Public Meeting on Impact of Pollution on Our Coastal Waters on July 23, 1968, Rockefeller University.

From earliest childhood, most of us recall vivid stories about the Hudson River. Our geography books were replete with praise of its discovery, its grace and beauty, its many usages by Indians and early settlers, its fishing, its navigational capabilities, its shipping and cruise prowess and what all of these meant in the settlement of upstate and downstate New York and New Jersey. Because of its tidal quality, the Indians, the first settlers on its lush and unblemished shores, called it "The River that runs both ways".

This mightiest of rivers has fallen victim to man's march of progress. It is polluted in its lower regions -- no longer fit for swimming, fishing and a variety of uses for which it served those who earlier inhabited its shores. Commercial, industrial and governmental neglect all have played a role in its present condition and plight.

Since 1941 New York City has contemplated treatment to correct the river's ills. After years of delay and indecision, the City of New York, spurred on by State and Federal subsidy, has decided to build a sewage disposal plant to clean the river. However, those who love this majestic river and our disappearing park lands are concerned. The announced plans call for a primary and secondary sewage plant to run for ten blocks, from

135th Street to 145th Street, and extend 600 feet into the river from the shore line. It is to be a monolithic pile of concrete, ugly in design and not guaranteed to cleanse the river. Estimates of its maximum efficiency range from 55% to 70% and even that 70% is not assured. This lack of greater efficiency has been attributed to site limitations. 220 million gallons of raw sewage will pass through this plant daily for treatment.

One can readily see what 55% to 70% efficiency will mean. The river will be even more polluted and because of its currents the Upper Harlem River, a recreational area, will be adversely affected. The configuration of the river, with its sharp indentations of shoreline at this point, will be forever destroyed. If there are fountains atop this plant, they will throw sprays of water 200 feet into the air and its unusable pools on the roof can only produce a garish effect, unworthy of the Hudson.

The tragedy is that the Department of the Interior has been led by the City of New York to believe that 90% efficiency will be reached at some future date. When? Who will say? This just does not happen. The history of sewage plants is that they deteriorate rapidly during the first four years and this deterioration sets in soon after original operations start. The most serious and pervasive element in the entire undertaking is that you, the Federal Pollution Control Administration, have listened to the dulcet, muted song of the New York City representatives and abandoned your own standards. This constitutes a downgrading of Federal standards and a down-grading of the Hudson River to a second-rate stream -- not worthy of adherence to Federal standards or protection under Federal's own policy.

We are all agreed that the Hudson River is polluted; a wind shift on any warm, humid day proves that. But must this mightiest of rivers be down-graded to second-class status? Why is the City content with 70% efficiency or less? Why cannot the City try for 100% efficiency? Why are State and Federal willing to subsidize this project when their own standards which require 90% efficiency in cleaning polluted waters are not being met? What about the use of ozone to sweeten the stench? This gas is toxic when it is in combination with car exhaust fumes. No engineer has given an unequivocal guarantee that this plant will not smell or that the ozone will not be harmful. This plant, located as it is in the middle of a densely populated residential area poses a serious potential health hazard, and no engineer will deny that either.

The quest for State and Federal financial participation, with resultant deadlines for completion, has caused the City to impose this industrial plant on a heavily populated residential area. At one point, the plant will be only 400 feet from houses. This poor planning for the Hudson River sounds the death knell for this river as one of our great, natural resources. Aesthetic and recreational values, instead of being enhanced, will be diminished. It sound the death knell for an on-going community which previously was scheduled for up-grading by City and State. This assures that the area will deteriorate into a ghettoized community--made so by forces outside itself. It precludes the possibility of access to the shoreline.

We have no quarrel with the need to clean the river and keep it clean. Long ago we were firmly convinced of the necessity for providing effective sewage treatment for the 650,000 people on the western side of Manhattan. A sewage plant to serve the west side area is legally mandatory and socially desirable. The question is not whether we built it, but where and how. We know it is not the responsibility of State or Federal to involve itself with sites; that is solely within the province of the City authorities. However, we are raising serious doubts about Federal's plan to subsidize this plant when the City cannot prove that this is the most efficient site for such a plant. No one is persuaded that the City has even casually considered alternate sites in non-resident areas recommended in an engineering report prepared by an engineering firm hired by the City in March 1968 to seek and recommend alternate sites. The City hired this firm but promptly rejected its recommendations. Thus, the taxpayers' money was squandered.

We want this river clean and unpolluted. We want the Lower Hudson shoreline to become a recreational area for fishing, boating, yes, even swimming; a healthy play area for our children and a sunny, green oasis in which our elderly can relax. We want to see water skiers use it to execute their daring without having their nostrils assailed by the present stench. Let it be clean enough for our young men to row proudly in their collegiate regattas without having to lift tons of debris with their oars.

Indeed, we do want the river clean; but we do not want it destroyed in the process. Its uneven and meandering shores should have recreational areas rather than a ten-block concrete monolith belching poisons from its gadgets into the atmosphere. There are few enough recreational areas, open air spaces and green areas because there is constant encroachment on our park lands. We want the river 100% cleansed and the park land along its shores returned to the people. We want it cleaned and we want access to it.

The very broad areas regarding which we have serious questions and doubts will be handled in a communication to Interior Secretary Stewart Udall.

There is no possession more precious than our natural resources; what greater natural resource than our Hudson River and our park land!

CHAIRMAN KLASHMAN: Anybody who has any documents to be mailed in can mail them to my office, Federal Water Pollution Control Administration, Room 2303, John F. Kennedy Federal Building, Boston, Massachusetts 02114. Anything that is mailed to us will be placed in the record.

Why don't we now take a five-minute break?

(Whereupon, at 4 p.m., the within meeting was adjourned; reconvened at 4:15 p.m.)

CHAIRMAN KLASHMAN: I now call on Mr. Harvey Hauptner, 101 Bay Street, City Island.

MR. HAUPTNER: Mr. Chairman, ladies and gentlemen, my name is Harvey E. Hauptner. I reside at 110 Bay Street, City Island, N. Y., and I appear here today as an officer of the Long Island League of Saltwater Sportsmen, Inc., a non-salaried conservation sportsmen's organization of over 2,500 members, and we are deeply concerned and chagrined over the possible dangerous effects that nuclear electric generating plants can have on the future well being and conservation of our fish, wildlife and aquatic ecology through thermal pollution and other dangers emanating from such plants. And as I was one of the witnesses to that tremendous kill of striped bass and other species at the Con Edison nuclear plant at Indian Point, N. Y. in 1963, we are now more than deeply concerned with what may result from the recently passed legislation sponsored at the behest of the Governor, that we can only view as creating a suspicious situation that could well create a Frankenstein that even the designers and builders of such a situation may not be able to control once this Power Goliath starts its march unafraid. This is all caused by the contents of Bill No. S 6305, which the League has demanded be repealed immediately with no ifs, and or buts. We have joined a huge number of citizens like ourselves that regard this as a vile and dangerous piece of legislation.

We have already seen an instance of this concealed power where a property owner on the Hudson River has been threatened with condemnation proceedings and his property taken away from him. This is unbelievable in free America.

We are also informed that certain nuclear plants are possibly using periodic flushing treatment with such components as chlorine, for controlling growths in pipes, hydrochloric acid, detergents and correction inhibitors. All these would have undesirable effects on our waters, our fish and our aquatic ecology, if such methods are used. And if they are we would bitterly object to their use.

The following letter is from Consolidated Edison Company of New York to Catholic Mechanic's Union of New York:

"Gentlemen:

"Increases in electric power load demands and further substantial increases anticipated in the immediate future make it absolutely essential that an additional nuclear energy generating plant be constructed at Montrose, New York, as soon as possible. This project is most urgent to enable this Company to fulfill its obligation to supply adequate electric power to meet the demands of the consuming public.

"As you are aware, we already have acquired a number of parcels of property adjoining your property at Montrose and the acquisition of your parcel is required to provide the necessary site for the proposed generating plant.

"In the course of discussions with you, we have offered to pay a fair and reasonable price to purchase your property but, as yet, this offer has not been accepted. In addition, we have proposed to acquire for you several suitable sites as a substitute for your property, but these offers too have not been acceptable to you.

"Under the circumstances, I must advise you that unless mutually acceptable terms for our acquisition of your property are agreed upon on or before July 1, 1968, we shall have no alternative but to take the necessary steps to acquire the subject property by the institution of condemnation proceedings.

"In light of our cordial relationship in the past, we are reluctant to pursue our legal remedy of condemnation unless it is absolutely necessary and would, therefore, urge that you make every serious effort to consummate the conveyance of your property to us in an amicable manner for a fair and reasonable consideration before July 1, 1968. We are available to meet with you for further discussions at any time.

"Very truly yours, W. Donham Crawford."

CHAIRMAN KLASHMAN: I am going to call Mr. James Pfafflin, Raritan Bay Environmental Council, Alexander Saunders, Scenic Hudson Preservation Conference, Dr. Kenneth Gold, Osborn Laboratories of Marine Sciences, New York, Brooklyn.

MR. PIRONE: I have made reservation with the Jersey office to speak.

CHAIRMAN KLASHMAN: I can only say that I am very pressed, but we had a number of people who made reservations.

MR. PIRONE: You will hear all speakers today?

CHAIRMAN KLASHMAN: Yes.

MR. PIRONE: Thank you.

DR. GOLD: Mr. Chairman, ladies and gentlemen, it has long been recognized that pollution of the Hudson River Estuary and Bays surrounding us is one of New York's most pressing problems. Waters that serve the people's needs for recreational and economic purposes must not be neglected indefinitely--the resultant cost in health, dollars and enjoyment is too high. It is with considerable optimism and enthusiasm, therefore, that we view this study.

The New York Bight offers a unique area for ecological study. Situated in one of the most highly industrialized and densely populated sections of the United States, it is markedly affected by man's activities. Into it flows vast quantities of fresh water from the Raritan and Hudson Rivers, carrying with it varying amounts of industrial and domestic pollutants. Direct contributions from sewage treatment plants further enrich the area.

As biologists we see the disposal of wastes as more than a mammoth engineering problem. The impact of pollutants on single species of aquatic life, and on ecological communities, results in subtle but often drastic and irreparable changes. If such changes had been noticed soon enough in the past, we feel that action would have been taken at the engineering level to prevent the present levels of water pollution.

Our first proposal, therefore, is for a program of constant vigilance over our valuable water resources through periodic monitoring of the environment. While aspects of this type of monitoring have been done in the past, we feel that additional new indicators of water pollution should now be included in routine periodic surveys. These data would supplement currently accumulated microbiological and chemical measurements. One of the best indicators of change, for better or worse, is the plankton. Observations are needed in selected areas on the species composition and abundance of the plants and animals that make up the base of the food chain. The usual annual cycle of succession must be known first. Once it is known, the ecologist will be in a better position to relate non-cyclic changes to environmental stresses.

Toward achieving this goal, a program is now in progress at the Osborn Laboratories of Marine Sciences, New York Aquarium, which will supply us with a base line of information, supported by a grant from the Rockefeller Foundation. An inventory is being taken of the phytoplankton species and some of the protozoa which are believed to be sensitive water quality indicators. In our search for other indicators, the invertebrates and their larvae will also be catalogued and their relative abundance determined. In addition, other measurements are being made such as temperature, transparency of the water, phosphates, etcetera, to have as many parameters as possible with which to characterize our study area.

Sampling methods are now time-consuming and crude by comparison with technological developments in other fields. We visualize permanently established stations as anchored buoys and platforms which will be sampled by all-weather high-speed research vessels. Ultimately the stations will be sampled automatically and as much data as necessary telemetered back to a data center for computer analysis and prediction of water quality.

Our second proposal is for an intensive educational program to call the public's attention to the need for clean waters and what the scientists and engineers are doing about it. This would be accomplished through lectures and films and the establishment of a marine sciences museum which would emphasize all aspects of programs related to the use of the oceans and estuaries as natural resources. Examples of the subjects that should be included in a museum of this kind are: oceanographic and estuarine research tools and their use in pollution studies; fishing boats, gear and methods; engineering problems related to waste disposal and maintenance of recreational facilities. An aware public, cognizant of the pollution crisis that confronts us, can be a major force in correcting our problems.

CHAIRMAN KLASHMAN: Thank you very much, Dr. Gold. Are there any questions from the panel?

I would like to call on Mr. James Pfafflin, Raritan Bay Environmental Council.

MR. PFAFFLIN: Mr. Chairman, panelists, interested citizens, I represent the Raritan Bay Environmental Council. Our motto is "Clean Air and Water, as we Live and Breathe". My statement will be quite short.

The Raritan Bay Environmental Council is composed of citizens interested in orderly and rational development and use of the Raritan Bay area. The Council is non-political.

The Council is deeply concerned by the continuing attacks upon the Bay area's environment by self-interest groups. It is equally concerned by the apparent indifference of New Jersey State officials to the numerous environmental pollution problems of the Bay area.

This deep concern is the basis of the position which the Council has adopted. The Council wishes to make clear that no criticism of New York or Interstate efforts is implied.

However, the Council is of the opinion that strong Federal action is necessary for adequate reclamation of the Raritan Bay area from its presently degraded state.

Development of the area must be for total use, with industry and recreation equally emphasized.

The Council feels that this can best be realized by strong Federal action. The area which we shall discuss is a small one. It is an area to which we have turned our attention; our experiences are, we hope, of value.

CHAIRMAN KLASHMAN: To save time, I will call on Mr. Alexander Saunders and Dr. Aulenbach.

MR. SAUNDERS: Mr. Chairman, ladies and gentlemen, I am Alexander Saunders, Co-Chairman of Scenic Hudson Preservation Conference, supported by more than 18,000 individuals and more than 50 civic and conservation groups and sportsmen's organizations -- all of whom have supported our battle to protect Storm King Mountain and the Hudson River Gorge from industrialization. This portion of the Hudson estuary is spectacularly beautiful and highly productive. It is completely unique within the American estuarine environment.

From the very beginning of documented history in this country, the Hudson River has been a valued resource. Beginning with the first explorations of Henry Hudson in 1609, there is a record of a fine fishery; of pure water and of a handsome land. Here is a quote from the diary of the first mate of the Half Moon:

"Sept. 14, 1609...The land grew very high and mountainous (Hudson was now entering the Highlands, and approaching West Point), the river is full of fish.

"Sept. 15...So we weighed with the wind at south, and ran up into the river 20 leagues, passing by high mountains. We had a very good depth, as six, seven, eight, nine, ten, twelve and thirteen fathoms, and great store of salmon in the river...At night we came to other mountains, which lie from the river's side...Our boat went to fish, and caught great store of very good fish."

Since that time the Hudson has been vital for transportation, as a source of water and economic value. The Hudson has been the center for the growth here on the northeastern seaboard. The early settlers moved north from New York along the shores of the Hudson and invested their efforts in developing the Hudson shores as a good place to live and the Hudson Valley as an area for commerce and industry. The recreation values are clearly shown in the writings, the poetry and the paintings of those who were attracted to the river.

Through three centuries the Hudson was New York's avenue to the north and west. Ocean-going vessels carried their goods to and from up-river communities. Unfortunately, until the very late 1800s, very little was known about the health of the river, and practical methods of exploitation were devised. The river was used as a receptacle for wastes and a source of fresh water. The fish of the river were harvested and were plentiful. Sturgeon was taken in such great quantity that it became nationally and internationally famous as Albany Beef.

By the 1890s, however, it was apparent that we were gradually causing intolerable pollution to the river, slowly destroying the values that had drawn our forefathers to the river and had served them so well.

During the 1890s, Charles Evans Hughes, in his concern for the waters of the Hudson, began our first pure waters drive; and by about 1913 most of the laws necessary to purify our waters were on the books. In the eyes of the lawmakers at the turn of the century, New York State had within its power the ability to control water pollution, and indeed the laws were enacted.

Unfortunately, the great drive for water pollution control was stopped at that point and the laws were never enforced. State and local officials were far too vulnerable to the pressures of the economic realities which made enforcement difficult.

In the ensuing years, there have been at State and local levels attempts, agreements and even interstate compacts to clean the Hudson estuary. These culminated with the 1939 compact between New York and New Jersey in which it was agreed that the recreation areas of the river and the fisheries of the river, and even the shellfisheries of the river, would be improved -- and improved in an atmosphere of purer waters.

These lofty aims and ideas were no more than statements of policy and purpose, and with these solemn pronouncements State and local government again did absolutely nothing to check the pollution and destruction of the estuary as a resource.

Within the last year there has been some activity under the newly-implemented pure waters act and bond issue of 1965, as there has for the planning of the river and its environs by the Hudson River Valley Commission. And there is a greater degree of consideration by both State and Federal authorities under provisions of the Hudson River Compact Act of 1966.

However, at the moment none of these actions have the benefit of completed research on the estuarine environment; nor do they have clearly-defined water quality standards; nor are they frames within a comprehensive plan. We are faced with piecemeal planning and approval of destructive projects all along the estuary. Beginning with the Storm King project and its potential destruction of the salt water/fresh water separation, and going to fish kills at the Indian Point site, and on to greater potentials of thermal pollution, there has been no clearly-defined standard or requirement to prevent further degradation of this estuary. There is as yet no clear policy regarding the dredging and filling of the river.

Today the emphasis in New York State on water pollution control is focused on both domestic and industrial wastes. These, of course, are important; but they are certainly only a first step in planning for the estuary. We have had experience with thermal pollution. We have had experience with massive fish kills in our river. These fish kills were the result of a thermal effect which the State did not or could not control.

We are now told that there are 24 nuclear sites which will be developed by utilities on the Hudson. Clear and firm standards must be set if the productive value of the estuary is to be protected and these standards must be enforced.

The entire future of the Hudson River will depend upon these standards and their enforcement. If the utilities serving New York State are not encouraged in a very firm and legal way to respect the quality of the Hudson River water, the hot water discharge by proposed power plants can completely destroy the river -- both as a productive element in our coastal fisheries and as a recreation resource.

Another great source of concern to those who respect the estuarine environment is the presently proposed fill for the Hudson River Expressway and for sanitary land fill areas along the river. Good wetlands and immensely valuable river bottom will be destroyed in massive quantities if the plans of State and local agencies are not changed. These wetlands and bay bottoms are now teeming with marine life -- a commodity apparently not highly valued by Departments of Public Works. If the proposed Hudson River Expressway is built as planned, an area in which vast fisheries abound (earlier this year a reported 4,000 pounds was taken by one boat), will be buried under rubble and fill. Though filling is not a problem relating strictly to pollution, it clearly relates to estuarine values and must be considered in this instance as a potential pollutant because of prolonged siltation.

Gentlemen, we face today a continuation of the deterioration that has resulted from the ignorance of the laws and lofty aims of past years. If we do not have Federal, State and local participation in the planning of the future of the Hudson estuary, the Federal Government must, with its expertise and power, draw clear guidelines as to the standards required for a good estuarine environment. The States must implement these standards through all of their laws and all of their agencies to maintain a sound and orderly growth along the shores of the estuary, and to ensure the proper use of its waters. And local government must plan within these guidelines to develop the kind of communities that can prosper in an improved environment.

Thank you very much.

CHAIRMAN KLASHMAN: Are there any questions?

(No response.)

If not, I should like to call on Dr. Donald B. Aulenbach.

DR. AULENBACH: Mr. Chairman, panel members and members of the audience, I am currently chairman of the Environmental Engineering Curriculum at Rensselaer Polytechnic Institute, where we try to show the effects both of engineering and social aspects in the way we conduct our lives.

Rensselaer Polytechnic Institute is located at the top of the map here (indicating) as Mr. Keeler indicated, and we are on the very northern edge of the estuary where the tidal dam would occur, approximately where the dark shadow appears on the map.

I also spent six years with the State of Delaware Water Pollution Control Commission in which we did much of the initial work on the Delaware River Basin, which led to some of the studies that have led to the Delaware River Basin Authority at the present time.

An estuary is a special biological ecosystem. In the estuary, the chemicals and biota range from fresh water types to sea water types. There are biological groupings which fit into a specific niche in this progressively changing environment. Other biota may be found in only the fresh water portions of an estuary and still others in only the salt water portions. A prime example of a species requiring a certain limited salt water range are the oysters and other related shellfish. Many plankton are specific for certain salt water concentrations and there are also many specific vascular plants.

Shellfish should be emphasized as a particular case with regard to pollution. If potential oyster beds are destroyed by pollution, it is impossible to provide the required supply of shellfish since they cannot be grown elsewhere. Here is an example where pollution has ruined a valuable and desirable industry. There may be other similar examples, but this one is the most outstanding. Therefore, an estuary has a specific dollar value due to industries which depend upon the specific conditions within that estuary.

An estuary also offers particular recreational opportunities. However, it is difficult to evaluate the actual value of these recreational uses in dollars and cents. Some estimates can be obtained from the amount of money spent on fishing, swimming and boating equipment. Additional costs may be added by calculating the value of the time spent engaging in such sports. A further cost, even more difficult to evaluate, would be how much it would cost to go elsewhere for the same recreation if the estuary under consideration were not available for these uses due to pollution. Boating in an estuary is very desirable in that it normally affords a great traveling distance in reasonably sheltered areas. Fishing in an estuary allows the catch of ocean-type fish without the hazards of going out into the ocean. Swimming is normally desirable, again due to the sheltered conditions provided in an estuary.

As for aesthetic values, this is a function of the individual taste. While an estuary at low tide exposes some bottom material, the aesthetic appearance is made less appealing by trash and other pollution which becomes exposed at low tide.

In summary, there are some specific values in an estuary which cannot be provided by any other environment.

Pollution has considerably damaged many estuaries. Former shellfish areas have been rendered useless. Certain fish have disappeared from estuaries and other fish which use the estuaries to spawn in fresh waters may become completely extinct if they cannot get through polluted zones for this spawning. Estuarine fishing industries at one time were worth millions of dollars, but they have been sacrificed to manufacturing industries and other polluters of the estuary. The pollution of our estuaries may be so great that certain water-related industries may never be able to return even though pollution is removed at some time. An example would be the covering of shellfish beds with deposits which would make them useless for shellfish production.

There is no question but that pollution should be removed from estuaries. This will allow the return of some specific biological systems which can re-implant themselves in the estuary. It may result in the return of certain fishing industries. If we feel that oysters are a desirable food, we must provide a place where they can grow. This will require considerable treatment of both industrial and domestic wastes on the entire watershed.

Pollution control on an estuary should be done on a drainage basin-wide basis. The authority should include representation from the bordering States. The Delaware River Basin Authority has set a precedent by including representatives from each State involved, plus the Federal Government. So far this system of management seems to be satisfactory. Local management cannot cope with the problems in an estuary which have a much wider scope than local government agencies. On the other hand, Federal control may not be able to define the local problems which are specific for a certain estuary. Thus, commissions should include representatives from the States involved, and the Federal Government may also be involved. One of the greatest means of protection of our estuarine resources is to engender a desire on the part of the public to reduce pollution in order to maintain estuaries in a condition which would be more beneficial to all persons concerned than the present system of discarding wastes into a stream without sufficient treatment.

Experience has shown that secondary waste treatment may not be enough to protect the water quality of the receiving stream. Therefore, pollution control should also take account of nutrient control. At the present time many estuaries are so polluted that algae growths cannot occur due to the lack of sunlight penetration through the water. If pollution which causes the turbidity is removed by secondary waste treatment, but the nutrients which could support algal growths are not removed, the likelihood exists that algal growths could increase to a nuisance level. It is of paramount importance to initiate research which will consider the influence of waste-derived nutrients on the ecology of an estuary. With these data, meaningful decision-making will be possible to protect estuaries, a great natural resource worthy of preservation.

CHAIRMAN KLASHMAN: Thank you very much. I now call on Mr. Donham Crawford, Administrative Vice-President of Consolidated Edison Company of New York, Inc.

MR. CRAWFORD: Mr. Chairman, members of the panel, ladies and gentlemen, the coastal waters and estuaries of this area represent a priceless asset in terms of the public benefits derived from them. These benefits include the aesthetic, recreational and economic uses of the waters and their shores. As a public utility serving New York City and Westchester County, Consolidated Edison uses the tidal waters of the East River, Harlem River and Hudson River and the Arthur Kill for cooling water in its 12 generating stations which supply over eight million people with electricity. This service is vital to the economic life of the community and to the personal well-being of each individual.

All of the electricity generated by Consolidated Edison is produced by converting to electric power the heat created by burning fuels -- coal, oil, natural gas and uranium. The nature of such conversion processes is that a substantial portion of the heat energy involved cannot be utilized, but must be released to either the water or air environment. Disposal of heat to the air is less desirable than to the waters because atmospheric release could subject local areas to fog and mist, because air cooling apparatus has an objectionable appearance and excessive land requirements and because air cooling is costlier and less efficient, thus adversely affecting the cost of generating electricity. For these reasons Consolidated Edison plants discharge heat to the tidal waters of its service territory rather than to the atmosphere. However, if it becomes necessary to add cooling towers to our facilities in order to protect the ecology of local waters, we will, of course, be prepared to do so.

The large quantities of condenser cooling water required for the operation of our generating stations are withdrawn and returned to local waters without change except that the temperature has been raised. Although large in terms of pumping requirements, the quantities used for this purpose are quite small compared to the great volumes of water available. After the water has been returned to its source, the higher temperature falls off rapidly due to mixing with the larger volume and loss to the atmosphere from the surface.

It is undeniable that indiscriminate thermal discharges could potentially harm our environment. It is equally undeniable that thermal discharge criteria which are more restrictive than the well-being of the prevailing ecology dictates might impose costly and unsightly alternatives which are undesirable from the public viewpoint. We believe that both these extremes can be avoided by careful planning which recognizes that each plant ant each waterway must be carefully studied and evaluated. We believe that cooling needs can best be met from the standpoint of the overall public interest by carefully controlled thermal discharges to the large natural bodies of water available in our area of operations.

In this connection, Con Edison has initiated or is sponsoring the following studies relative to the thermal effect of present and proposed nuclear plants on the Hudson River ecology:

1) In 1964 the Alden Research Laboratories of Worcester Polytechnic Institute built models of the Indian Point plant intake and discharge facilities at their Holden, Mass. laboratory. Studies have been made and are continuing on the effect of thermal discharges from present and future nuclear units on the temperature distribution in the river.

2) Northeastern Biologists, Inc., of Rhinebeck, N. Y., conducted a survey of river temperatures in the vicinity of the Indian Point Unit I discharge channel outfall in July, 1966 and April, 1967, while the plant

was operating at close to maximum capacity. Similar surveys will be conducted after future units have been placed into future operation to assure that regulatory discharge criteria are met.

3) Quirk, Lawler and Matusky, Environmental Science and Engineering Consultants, have made mathematical projections to determine the effect of the simultaneous operation of our nuclear units on the temperature distribution in the river.

4) Dr. Alfred Perlmutter, Professor of Biology at New York University, conducted a survey of the river fishery in the vicinity of the Indian Point Unit #1 discharge channel outfall in 1966 while the plant was operating at close to maximum capacity. His conclusion, resulting from this survey, was that the rise in temperature due to operation of the plant had no adverse effect upon the Hudson River fishery. A similar survey will be conducted by Professor Perlmutter after Unit #2 and also Unit #3 are placed into operation.

5) The New York University Institute of Environmental Science has been making independent ecological surveys in the Hudson River in the vicinity of Indian Point each summer for the past several years under State, Federal and other grants. Con Edison is supporting this work.

6) The Hudson River Fishery Study, in connection with the Cornwall Pumped Storage Project, has been underway since 1965. This study is being financed by Con Edison and is being carried out under the general direction of the U. S. Department of the Interior Fish and Wildlife Service and the New York and New Jersey Conservation Departments, and is under the direct supervision of a Technical Director from the Fish and Wildlife Service. The study covers an 83-mile stretch of the Hudson River from Croton to

Coxsackie and encompasses the Indian Point area. This study will also provide background data on the fishery population in the river.

7) Negotiations are now under way with the Sandy Hook Marine Laboratory of the U. S. Department of the Interior Fish and Wildlife Service to undertake a study of the effects of temperature fluctuations on the fish and micro-organisms indigenous to the Hudson River at Indian Point. Also under consideration is a similar study for Long Island Sound in connection with a possible nuclear unit at David's Island...off New Rochelle.

The company also maintains careful surveillance over chemical and radioactive discharges to the water serving our plants to assure that these discharges are virtually nil. The State of New York's Department of Health also carried out such surveillance and has confirmed that operation of our present nuclear unit has shown no change in the environmental radiation levels in the vicinity of our Indian Point Station.

In conclusion, we believe that the recreation, aesthetic and ecological values of local waters should and can be protected while also preserving the vital economic uses of these waters. We have made significant efforts to assure this, and we expect to continue and extend our efforts to this end.

CHAIRMAN KLASHMAN: Again, we would very much appreciate it if we can get from you any figures you might have.

MR. CRAWFORD: I will submit a more extensive statement and will have in that what information you want.

CHAIRMAN KLASHMAN: Thank you very much. Are there any questions?

(No response.)

If not, I would like to call on Mr. William Graner.

MR. GRANER: Mr. Chairman, panel members, this is a statement on behalf of Dr. Leone, Suffolk County, Long Island.

The Suffolk County Department of Health recognizes the need for the concerted efforts by all concerned in taking protective measures for the conservation of our precious estuarine waters.

Our exploding population has resulted in huge pollutional loads being placed upon our waters. Since 1955 our population has increased from some 400,000 to over 1,000,000.

In the absence of municipal sewer districts, we have relied heavily on septic tanks and cesspools as a means of disposing of our domestic and industrial wastes. This has resulted in a serious deterioration of the quality of the glacial water stratum in the populated areas of the county.

The contaminants reaching our ground waters not only damage our drinking water sources but also have a direct relation to the pollution of our estuarine waters.

A cooperative study was carried out several years ago in the Great South Bay by the New York State Department of Health, the U. S. Public Health Service, the New York State Conservation Department and the Long Island State Park Commission and the Suffolk County Department of Health, and reached the following conclusions:

The waters of Great South Bay are abnormally enriched by nutrients having their principal origin in organic wastes produced by human activities. These wastes coming largely from sewage effluents reaching the ground water which is discharged to the Bay. In the eastern portion of Great South Bay a significant amount of nutrients also come from duck farms.

Contamination of the Bay waters from the sources indicated provides ample nutrients to support the large plankton population. Algae of all kinds will continue to flourish and to produce occasional excessive blooms so long as the ground and surface waters continue to receive the liquid wastes described. As population density increases, the situation may be expected to become worse.

The main recommendation to improve the water quality of the Great South Bay included in this study report was for a comprehensive public sewage system to serve the entire drainage basin. Further, that the sewage treatment plants serving this area have their effluent disposal either returned to the ground after a very high degree of treatment, or piped to the ocean waters.

Another major contributor of pollution to the estuarine waters of Suffolk County are the duck farms. Suffolk County has at present 34 active duck farms where some 7,000,000 ducks are raised and processed annually. To appreciate the pollutional loads by duck farms, our engineers have estimated that some 70 tons of total solids are produced per day with over 43 tons as suspended solids; 11 tons of BOD are produced per day plus over four tons of phosphates and 2-1/2 tons of nitrogen compounds per day.

There has been a major step taken recently to alleviate the duck farm pollution problem in that 32 farms have complied with the State Commissioner of Health's orders in either removing their ducks off the natural waters or have constructed aerated lagoon-chlorination systems. These new treatment devices are capable of removing over 90% of the BOD and suspended solids plus reducing the coliform organisms to an acceptable level.

However, even if we are successful in obtaining treatment of all duck farm discharges, there are vast amounts of bottom sediments in the tributaries to the bays in depth up to ten feet. A recent survey of bottom sludge in the Moriches Bay area revealed that there are some 7,000,000 cubic yards of such sediments.

Suffolk County has initiated measures to cope with the advance of pollution of our water resources:

1) A comprehensive public sewage plan was recently completed covering the five western towns of the county through a State Health Department grant of $660,000. A similar study is being planned to be initiated in the near future for the five eastern towns.

2) The Suffolk County Board of Supervisors have reorganized the Suffolk County Sewer Agency. The agency is diligently working toward an early referendum for the establishment of Suffolk's first county district.

3) A comprehensive water supply plan for Suffolk County is being carried out under a $340,000 New York State Department of Health grant. In addition, the County of Suffolk is contributing some $800,000 for the installation of a series of 14 deep test wells covering the unexplored water strata of eastern Suffolk.

4) The Suffolk County Board of Health enacted local regulations effective January 1, 1965, which require the installation of public sewage collection and treatment facilities for 100-plus home realty sub-divisions, large apartment projects and shopping centers.

5) Research has been carried out under the Health Department's supervision with the aid of State and Federal funds on the pollutional effects of detergents and other sewage constituents upon the ground waters; procedures for recharging treated sewage effluent into the glacial aquifer.

There is no doubt that we have made a belated start and we face high costs and many years of hard work if we wish to protect our precious natural resources for our future generations.

Clean water has a price tag. Dirty water costs more, much more than we can possibly afford. The current sources of Federal and State grants need to be increased for those communities unable to meet their commitments. Grant monies should be made available to sewage collection systems as well as treatment facilities. Untreated waste is everybody's business.

CHAIRMAN KLASHMAN: Are there any questions?

(No response.)

If not, I call on Mr. Pirone.

MR. PIRONE: The complete package that I would like to submit this afternoon consists of about 50 pages, and Mr. John S. Farlow has taken this complete package and has agreed to reprint it, consisting of the documents and several other things.

My name is Dominick Pirone and I live at 120 The Esplanade, Mount Vernon. I am a consulting biologist for the Hudson River Fishermen's Association.

I wish every reference used in my testimony to be included in full at the point of mention as if it had been read at that time. (Editor's Note: These references are reproduced in full immediately following Mr. Pirone's statement.)

We have at this moment a magnificent estuary, known as the Hudson River, in New York State. Its fishery resources are nothing short of fantastic. The State chooses to ignore the existence of this treasure for reasons that are not too hard to fathom if one is familiar with state politics and policies. Please see:

1. Boyle, Robert. "Carps at Bureaucrats for Not Netting Gold Mine". Sunday News. January 14, 1968.
2. Luks, Fred. "Treasury of Fish". Daily Argus. July 13, 1968.
3. Boyle, Robert H. "Croton Has Gold-mine in Hudson Fish". Croton - Cortlandt NEWS. June 20, 1968.
4. Luks, Fred. "The Hudson River Rates First For Bass". Daily Argus. March 5, 1965.
5. Luks, Fred. "The River Blues Hot Angling Tune". Standard Star. September 16, 1966.
6. Luks, Fred. "Meet Ron Dagon, Ecologist". Daily Argus. Tuesday, June 25, 1968.

These are but a few of the available articles documenting the immense richness of the Hudson River and the nothing-job done by the state to utilize the incomparable fisheries therein. I include no more at this point since we are used to a situation in New York State whereby public hearings mean nothing at all. A classic example, in relation to the Hudson River, occurred but a few days ago when the Governor's Hudson River Valley Commission, headed by his brother-in-law, found unanimously for an Expressway that the public had testified better than 100 to one against. The Expressway is but one of many projects championed by our Governor on the Hudson River, each of which is potentially a death-blow to the River and the super-abundant life now in it. Please see:

7. Pirone, Dominick J. Testimony to The Hudson River Valley Commission, June 20, 1968. 3 pps.
8. "Black Sheet" on NYS Power Authority Law. # A 6305 & S 5746.
9. Boyle, Robert H. Letter (1 p.) to Long Island League of Saltwater Sportsmen. July 9, 1968.

The Power Authority Bills mentioned and reproduced in part above, call for a negation of all conservation law in relation to thermo-nuclear plants. We are calling for repeal of these nefarious bills over which the Governor expressed such joy.

If the much-hated Expressway does not kill the River and its fisheries, thermal pollution by the utilities, notably Consolidated Edison Company of New York, may well complete the job. Please see: (#9, Boyle, again.)

10. Pirone, Dominick J. Letter to Senator Muskie. July 6, 1968, 2 pps. with 2 pp. attachment, A STINK OF DEAD STRIPERS, Robert H. Boyle, April 26, 1965. Sports Illustr.
11. Pirone, Dominick J. Letter to Congressman Dingell. July 12, 1968.
12. Pirone, Dominick J. Letter to Congressman Ottinger. July 12, 1968.
13. Gordon, Seth. "Rivers are Treasures" Field & Stream, June, 1968.
14. Laycock, George. "They're Making It Hot for Fish". Field & Stream. June, 1968.
15. Mihursky, Dr. J. A. "Thermal Loading New Threat to Aquatic Life". Conservation Catalyst, Spring, 1968. (4 pps.)
16. Eipper, A. W., et. al. "Thermal Pollution of Cayuga Lake by a Proposed Power Plant." May 27, 1968.
    A ten-page booklet, privately printed by the authors, 17 scientists.
17. Kennedy, Edw. "The Electric Power Plant Siting Act of 1968". Remarks from Congressional Record, vol. 114, No. 63, April 17, 1968. 2 pps.
18. Anon. "Atom power plant in hot water". 2 pp. Business Week. June 29, 1968.

Not only are the thermo-nuclear complexes deadly to the River and its huge fisheries, but because of the extraordinarily non-thinking way in which the AEC requires and approves their siting, they take some of our very best lands along the River. Please see:

19. Brodey, Jesse. "A-Plant Land Grab May Explode". Sunday News. July 14, 1968.
20. Transue, James. "Con Edison seeks tract." Patent Trader. July 13, 1968.

Were it not enough that we face the death of the River and its fisheries with full NYS legislative approval, please note that we must resort to legal suits to stop polluters. Please see:

21. Kaufman, Michael T. "Rep. Ottinger Suing to Halt Seepage of Oil into Hudson River." NY Times. June 29, 1968.
22. Anon. "Ottinger Sues RR over Oil in Hudson". Daily News, June 29/68.
23. "Ottinger Brings Suit Over Hudson Pollution". Anon. Daily Argus.
24. Five-page copy of above suit.

To top off the whole rotten situation on the Hudson River, those who use its fisheries for recreation or to make a living, are unrepresented by direct exclusion from any role in the decision making for this great resource. Please see:

25. Pirone, Dominick J. Letter to Hon. Stewart L. Udall, July 8, 1968. (2p)

What is to be done to save the Hudson River and its fisheries? The answers are all too obvious to list here. The question is, will what is needed be done? Will the monolithic authorities of the AEC, the FPC, the Army Corps of Engineers, and the "powers that be" in New York State be broken? Only the very highest Federal Officials, Agencies, and the Congress can do it. Detailed proposals are contained in Boyle, Robert H. "How To Stop The Pillage of America" Sports Illustrated December 11, 1967. with the editors and correspondents of S.I. Please include this as #26.

Thank you.

CHAIRMAN KLASHMAN: I would like to clarify the fact that this is not a hearing; this is a public meeting. A hearing is regulatory.

MR. PIRONE: Statement under any circumstances.

CHAIRMAN KLASHMAN: No, it is a regulatory thing.

MR. PIRONE: What I mean is, when a conservationist or a biologist is trying to do something to maintain the quality, and gets up to speak in New York, we feel at this point quite worthless after the events of the past several weeks.

CHAIRMAN KLASHMAN: Mr. Pirone, are there any questions? On the part of the panel? I would like to ask you a question, because you made reference to the letter you had sent to the Secretary of the Interior.

MR. PIRONE: Yes, sir.

CHAIRMAN KLASHMAN: Will you give me the reference?

Mr. PIRONE: Yes, Mr. Farlow has got the full letter.

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WESTCHESTER-FAIRFIELD
SECTION TWO

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Carps at Bureaucrats for Not Netting 'Gold Mine'

By ROBERT BOYLE
Senior Editor, Sports Illustrated

There is an enormous, renewable gold mine in New York State, but it is being abused and squandered to the economic and recreational loss of the citizens of the state, especially those of Westchester, Putnam and Rockland counties. This gold mine is the fishery resources of the Hudson River.

From the Catskill Mountains down to Riverdale the Hudson is an amazingly productive body of water. It is swarming with millions of fish, notably striped bass, "glamour" game fish of the Atlantic Coast.

Stripers range in size from 2-inch babies hatched last June off Storm King Mountain to lunkers of 30-40 and possibly 50 or 60 pounds.

The Hudson also has white perch (so numerous that they can often be caught every time a line goes in the water), Atlantic sturgeon, the rare short-nosed sturgeon (it is possibly the only river in North America still harboring them); also tomcod, largemouth bass, shad, herring, yellow perch, catfish, spearing and shiners, to name only some of the fish.

Tropical Visitors

In the summer and fall, when brackish water runs up from the ocean, there are bluefish (mostly snapper size, though two to five pounders have been taken at Croton), menhaden, needlefish and unusual visitors from the tropics, like the jack crevalle, ordinarily thought of as a Florida game fish.

Last September at Croton, I seined a baby mangrove snapper, now in the collection of the American Museum of Natural History. The usual range of the mangrove snapper is between Brazil and Florida.

Given the fish in the Hudson, you would expect the river to be jammed with boats and anglers from everywhere, particularly during the spring and fall when striped bass are thick. Yet, except for a relative handful of fishermen, the Hudson is empty, the fish unutilized locally.

Why? There are two main reasons: Bureaucratic neglect and failure by state and federal authorities to enforce anti-pollution laws.

Salt and Fresh

The tidal Hudson, which runs from New York harbor to the Troy Dam, is under the jurisdiction of fresh water biologists in regional offices of the State Conservation Department. Almost all the desirable fish in the tidal Hudson are basically salt water fish, but fresh water biologists in charge do not have the time or gear to deal with them.

I once asked one of these biologists what fish could be found where the Croton River empties into the Hudson. He answered "I don't know, but tell me if you find out."

The situation could be corrected at once at no cost to the taxpayer with a simple stroke of the pen in Albany. The conservation department should put the tidal Hudson under the jurisdiction of the department's own Bureau of Marine Fisheries which has the training, gear and interest to explore and publicize the bounty of the river.

Could Be Bass Capital

If the tidal Hudson were managed by the Bureau of Marine Fisheries, there is no reason why Tarrytown, Nyack, Ossining, Croton or Peekskill could not compete with Montauk for the title of "Striped Bass Capital of the World." The sports fishery for stripers alone could bring millions of dollars into the Hudson Valley.

Strong laws have been on the books for years, but the laws are rarely enforced. Many persons are reluctant to fish in a river where water is stained with oil and looks otherwise unwholesome.

Fish (especially stripers) taken from the Hudson have the reputation of tasting of oil.

Pollution's Toll

Polluters of the river are crippling its recreational and economic potential. The obvious answer to illegal pollution is strict enforcement of the law.

Under the New York Harbor Act of 1888 and the Federal Refuse Act of 1899, convicted violators may be fined $2,500 and sentenced to a year in prison. Interestingly, both laws say that one half of the fine is to be paid as a reward to the person who reports the violator.

Hudson Anglers Put Hooks Into Polluters: Demand Jail

By JESSE BRODEY

Jail terms for corporation executives as well as heavy fines for companies convicted on charges of polluting the Hudson River were urged yesterday by the Hudson River Fishermen's Association.

The group, calling for a federal crackdown, declared that industrial polluters were ruining one of the potentially great fishing grounds and recreational waterways.

They accused the Army Corps of Engineers of failure to use the full power of an 80-year-old

year, not one polluter drew a jail sentence.

The fishermen's association has been conducting a "Bag-a-Polluter" campaign. It is distributing free to the public thousands of business reply cards, urging citizens to report to it any suspected cases of pollution.

"You can be sure that once we

enforcement activities, a spokesman reported, included 758 investigations and 605 reinvestigations of anti-pollution violations in fiscal year 1967.

The association early last year reported oil draining into the Hudson from the New York Central's diesel locomotive maintenance yard at Harmon. The fishermen carried their complaint to

HUDSON RIVER
DEDICATED TO THE RESTORATION AND PRESERVATION OF THE NATURAL RESOURCES OF THE HUDSON RIVER
FISHERMEN'S ASSN., INC.

The Daily Argus
A Member of the Gannett Group
MOUNT VERNON, N.Y., SATURDAY, JULY 13, 1968

'Treasury Of Fish'

By FRED LUKS
Hunting & Fishing Editor

This past winter the 110-foot research vessel Dolphin operated by the United States Marine Laboratory at Sandy Hook, N.J., plowed up the Hudson making exploratory trawls in the channel off Haverstraw. With every lift, said one ecstatic observer, the net bulged with a "treasury of fish," striped bass and sturgeon.

There were according to a team of fisheries experts headed by the eminent Dr. John Clark, more than a hundred sturgeon, and after several were tagged, all were released. The largest was nearly four feet long!

Gaff And Gun

In late spring a local ecologist flying by helicopter over Croton Point witnessed schools of sturgeon massed near the surface in numbers estimated to be well over a thousand. And during the recent shad season an upstate netter fishing about 30 miles above Poughkeepsie, landed a sturgeon weighing 120 pounds.

Sturgeon are not new to the Hudson but in a widespread reawakening of interest in the river the knowledge that sturgeon are still very much part of the scene kindles a fervor among anglers and professional observers.

Viewing the fishery both scientifically and as a sportsman, biologist Dom Pirone of the Hudson River Fishermen's Association, says, the continued presence of sturgeon is a real thrill. How many people realize this species goes back to the age of dinosaurs? But the important thing is to utilize the fishery.

In the preceding century when the United States was a foremost supplier of sturgeon and caviar, Hudson River sturgeon were intensively exploited. Yearly estimates of exports for the Hudson's river and Atlantic sturgeon were as high as $5,000,000.

The local sturgeon fishery declined perhaps for the same reason as sturgeon-netting dwindled elsewhere. Many netters faced with changing conditions and the problem of maintaining expensive gear withdrew to easier means of earning a livelihood.

Said one man, "you can appreciate what it means to upkeep of equipment after you see what just one sturgeon can do to a net. And it's also a problem getting a sturgeon into a boat." Everett Nack, the upstater who caught the 120 pounder a couple of months ago, remarked, "I'm thankful I had two other men in the boat with me at the time otherwise it would have been real tough getting that thing aboard."

Sturgeon are caught by hook and line in many places and it has been done here, insist Hudson savants. The method consists of still-fishing on the bottom using large killies for bait.

The exact weight of the biggest sturgeon ever caught in the Hudson is clouded by local pride and lore. But the river must have produced some real heavyweights because oldtime fishermen make references to fish "over 500 pounds."

But those monsters couldn't have generated any greater excitement than the seven-inch specimen caught last December near Verplanck by Robert Boyle of Croton doing scientific research. "That little fellow," says a Hudson fan, "establishes that sturgeon are still spawning in our river."

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Ossining, New York 10562

(Robert H. Boyle is a Founding Director of HRFA

Croton Has Gold-mine in Hudson Fish

The village of Croton-on-Hudson could become the striped bass fishing capitol of the world, Robert H. Boyle of Finney Farm told the Croton Rotary Club at the Post Inn Tuesday. A senior editor of Sports Illustrated and holder of a scientific collector's license from the state, Boyle has been studying the Hudson for the last six years as research for a book.

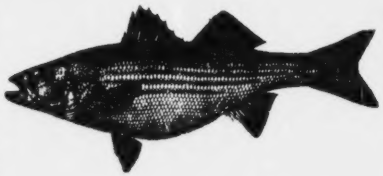
"The lower Hudson River, especially Haverstraw Bay right at Croton's front door, is an extremely rich body of water and very productive of fish life," Boyle said. "Croton's economic future lies in intelligent use of the resources of the bay. For eight months of the year, the greatest concentrated striped bass sport fishery in the United States, and the least known, is to be found in Haverstraw Bay and the lower Hudson."

Boyle said that last March 6 and 7, he had gone aboard the "Dolphin", a research vessel of the U.S. Fish and Wildlife Service, for an explatory cruise of the bay, and that one school of fish observed was 25 feet thick and two miles long. "There were so many striped bass and sturgeon in the river," Boyle said, "that the Dolphin couldn't trawl for more than five minutes. We trawled once for 12 minutes the first time the net went in the water, and we got so many fish that they were crushing one another. The amount of fish was incredible. The Norwegian skipper on board, a veteran of trawling off Georges Bank and Nantucket Shoals, never saw anything like it in his life. Neither had the government scientists. Judging from the fathometer readings, you'd have to think the Japanese Navy was down below."

ROBERT H. BOYLE

Probably four different populations of striped bass use the Hudson for spawning. Boyle said. "There are millions of striped bass in the Hudson," he went on. "The Hudson may supply from 10 to 20 per cent of the fish of the entire Atlantic coast run. When these striped bass, the most sought after game fish on the coast, the glamour fish, are not in Long Island Sound or off the Jersey Coast in the summer, they are in the Hudson. The Long Island Sound population comes in through Hellgate late in September, up the Harlem River past Spuyten Duyvil around Columbus Day, and moves north of Croton Point into Haverstraw Bay around the first week in November. Another population, which summers off southern Long Island and Jersey, adheres to pretty much the same time table. These fish stay in the river until sometime in late May and June, and after spawning in the Highlands region, they migrate out. A third population, about which not much is known, apparently consists of very large striped bass that winter further south, then head for the Hudson in May to apawn. After spawning, they then leave for Montauk, Naragansett Bay, Rhode Island, and probably Cape Cod. I think it possible that when these bass are running, the world record of 73 pounds on rod and reel can be broken by fishing off Croton Point. Last month, a novice angler, who had been fishing only three weeks in his life, caught a 34 pound striper at the Beacon Newburgh Bridge.

A fourth population seems to stay in the river all year. The point I am making is that there is no reason why Croton could not vie with Montauk or Cape Cod for the title of striped bass capitol of the world. In 1960, the government figured striper anglers spent $45 million on their sport.



STRIPED BASS — VERY PLENTIFUL

Croton is in the position to reap tremendous economic and recreational benefits from just striped bass sport fishing alone. I won't even mention the perch that can be caught every time the line goes in the water. Other river towns can benefit too. The striped bass fishery is worth millions of dollars a year, if properly managed. I hear local residents complaining about taxes, the need for industry, and so on. Look to the river — Croton's future is right in front of us. Haverstraw Bay is our Oklahoma oil fields, our California gold strike. It's time people learned this, and the more who do, the faster we'll move to protect the river from pollution and despoilation."

Boyle said the great potential of the Hudson was unknown to most persons because the State had neglected the Hudson. "All we've gotten from the state is a big zero," Boyle said. "The lower Hudson River is under the jurisdiction of freshwater biologists much further upstate who have not the time, training or gear to explore and manage the river. One reason we have constant controversy about the river — Storm King, nuclear power, the Expressway — is because the state doesn't know or care about or understand the life in the river. Haverstraw Bay is brackish water, not freshwater, and Croton and other communities would take a giant step forward if the State Conservation Commissioner simply took jurisdiction of the lower Hudson from freshwater biologists and put it under the state's own and very competent Bureau of Marine Fisheries. The biologists in this bureau have the training, the gear and the interest to explore, advise and publicize our bounty, but as of now they can't come north of the Battery except by special invitation. This change can be made at no cost to the taxpayer, but so far the state has refused to make it. This is ridiculous."

A director of the Hudson River Fishermen's Association, Boyle also spoke briefly on the Association's efforts to halt pollution of the river, most notably by the Penn Central shops at Harmon. He urged anyone interested in the river to join the Association, which publishes a quarterly news bulletin on the river and dispenses pre-paid "Bag-a-Polluter" post cards. "How many people know that there have been strong federal laws against pollution of the Hudson since 1[illegible]?" Boyle asked. "Not many. Yet a convicted violator can get as much as a year in prison and a $2500 fine, with half the amount of the fine going as a reward to the person reporting the violation."

For readers interested in joining the Hudson River Fishermen's Association, Boyle said dues are $3 a year, and the address is care of Post Office Box 725, Ossining, N.Y., 10562.

CRoton 1-4788 CROTON-ON-HUDSON, N.Y. THURSDAY, JUNE 20, 1968
Croton-Cortlandt NEWS
VOL. LXXIV, NO. 38 COMBINED WITH CROTON-HARMON NEWS, ESTABLISHED 1894 AS THE CROTON JOURNAL Price Ten Cents

ARGUS, MOUNT VERNON, N.Y., FRIDAY, MARCH 5, 1965

Gaff And Gun

2.

The Hudson River Rates 1st For Bass

By FRED LUKS

Hunting & Fishing Editor

Mention the Hudson River these days and up comes the subject of striped bass. It is common knowledge the Hudson is a spawning ground, but what contribution does it make to the coastal fishing picture?

In hearings before a legislative committee that met at Bear Mountain, the question was answered by John Clark of the U.S. Bureau of Sports Fisheries and Wildlife. Clark is also director of the Sandy Hook Marine Labratories in New Jersey.

'The Hudson River,'' testified Clark, ''is the principal spawning area for the striped bass of the New York area. Contrary to previous belief, the Chesapeake Bay is not the main spawning ground for striped bass of this area.''

In support, Clark noted that the Long Island League of Salt Water Sportsmen had tagged more than 7,000 striped bass during the period 1959 to 1963. The bass were tagged from sothern New England to northern New Jersey.

Some 518 tags were recovered from captured fish and ''what the tagging shows is that the Hudson River is the main area for spawning of striped bass fished by New York fishermen,'' Clark reiterated.

In 1957, biologists Rathgen and Miller made a study of Hudson bass and found the spawning season is May-June and that the young bass live in the Hudson a long time afterward. Details of the survey are in the records of the New York State Fish and Game Journal.

Almost earth-shaking is the information imparted by 188 returned tags since they show the Hudson striper to engage in extensive traveling.

''Of these 188 returns,'' Clark said, ''93 were caught in the Hudson River and its approaches, 60 were caught in the open coastal area, and 35 in or near other rivers from Rhode Island to Virginia.''

The tagging confirmed that striped bass frequent the river for spawning since the biggest percentage of tags returned came from the spring season. It was observed that spawning bass start to enter the Hudson in late winter and reach peak numbers in April.

In early summer the parent bass head to coastal waters. Their eggs, which are semi-buoyant, hatch in a few days.

Also introduced in testimony by Clark was an estimate that sport-fishing for bass is an annual industry worth over $45 million.

The economics is predicated on an approximated catch of nine million bass and a value of $5 per fish, computed from fishing expense and investment.

THE STANDARD-STAR, NEW ROCHELLE, N.Y., FRIDAY, SEPTEMBER 16, 1966

Gaff & Gun

The 'River Blues', Hot Angling Tune

By FRED LUKS
Hunting & Fishing Editor

The bounteous Hudson which some say is one-third water and two-thirds fish, is getting its share of bluefish these late summer days.

And for lack of any other descriptive we'll call them ''river blues'' because they don't fall into the snapper or jumbo categories.

These are voracious little choppers that predominate in the eight to twelve-inch sizes and from all accounts certain places in the Hudson are teeming with them.

Bob Boyle, Croton resident, and ardent River fan, relayed word that they've been particularly thick just south of the Croton Point area.

Boyle had great sport with a swarm of the scrappers getting thirty on fly-rod tackle and a white bucktail.

The buildup of blues started several weeks ago with fish of fingerling size. Larger specimens have been coming in steadily and Boyle's catch suggests that Hudson devotees might yet see a few jumbos.

Boyle's angling catch, incidentally, is hardly less spectacular than the discovery made while seining the river with Dom Pirone of Mount Vernon and Ron Dagon of Croton. Under a scientific license the trio is gatherig facts about the striped bass fishery.

Thus far they've tabulated twenty-five species, the most unusual being the ''Jack Crevalle,'' a fish native to southern waters. Upon investigating they find the Jack Crevalles have been showing up in the Hudson for years.

Another oddity brought to light in their studies is the presence of ''needlefish'' also an exotic more native to sub-tropic climes.

There's reason to believe something will come out of the one-man campaign to exclude menhaden boats from netting Long Island Sound waters.

Harvey Hauptner, the young octogenarian who got the ball rolling, apprised the column he has been in contact with numerous sports, commercial and conservation representatives at his home in City Island.

At a recent meeting with other interested parties including a state legislator Hauptner outlined the angler's viewpoint on the netting of menhaden also known as mossbunkers. The bunker-boat operations have an adverse effect on sportfishing.

The moss bunker is a baitfish that attracts striped bass and bluefish.

An absence of big bass and sporadic disappearances of blues are blamed on the super-efficient activities of the netters.

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Ron Dagon is a Founding Director of THE HUDSON RIVER FISHERMEN'S ASSOCIATION. He has presented expert testimony for us in various proceedings. He is one of the too few men who knows, first hand, just how fabulously rich in life the Hudson River is.

Jim Kleinert is a Past Director & Past Treasurer of HRFA.

The Daily Argus
A Member of the Gannett Group
MOUNT VERNON, N.Y., TUESDAY, JUNE 25, 1968

Meet Ron Dagon, Ecologist

By FRED LUKS
Hunting & Fishing Editor

A busy schedule has ecologist Ron Dagon of Croton On Hudson frequently commuting by helicopter to New York City. One day while whirling over the waters of Croton Point he spotted torpedo-like shapes in the water below.

"They were sturgeon," says Dagon, "and there were thousands, some up to six feet long."

When the pilot circled the cove, Dagon sighted numerous other fish which he identified as striped bass and carp. The 35-year-old scientist, a professional observer of the environment, refuses to speculate why sturgeon were schooled so close to the surface but like other Hudson enthusiasts is thrilled over the fact the species is still present here.

Gaff And Gun

"The Hudson's an exciting river," comments Dagon who has made ecological studies at such widely-divergent places as the Arctic tundras and Amazon jungle. He chuckles as he recalls moving to Westchester from New Jersey more than a year ago, and on the persuasion of friends who beat the drums for the Hudson's beauty and fishing potential.

"Thy were so convincing I located here without the prospects of a job," he said. Since then he has become associated with the Hudson Institute, a research organization at Croton. He also dubs himself "unofficial ecologist" for the village of Croton.

His prior career included work with the New York Botanical Gardens, McGill University, Boy Scouts of America and a seven-year span with the U.S Army and captain of a hard-fighting Ranger group.

Ecology is defined as a biology dealing with the mutual relations between living things and their environment. Dagon impresses one with the importance of learning as much as possible about resources which explains his happiness at seeing the sturgeon in the Hudson.

Good utilization is another thing he chats about and recalls living with a tribe of South American Indians who relied heavily for food on fish obtained from a local stream. The natives harvested the fish by shooting with bows and arrows ("They were expert archers") and stunning them by spreading rotenone poison in the water.

By employing a simple dip net Dagon demonstrated how they could step up their catches. "It's inconceivable," he affirms, "that anybody should be in want in the midst of plenty."

Of South America he envisions that some day the Amazon's disastrous fluctuations can be controlled so that the environment will be made more livable for the people existing along its shore. "It means," he estimates, "creating a lake as big as France, but it's practical."

For the much-traveled Dagon future ecological projects will probably include an evaluation of Asian fisheries and perhaps more studies of river systems in Latin America. Meanwhile, he indicates, he'll be adding to his knowledge of the Hudson by "fishing for perch and bass near Croton Point."

ECOLOGIST Ron Dagon chats with fisherman Jim Kleinert near Croton. Hudson River is an exciting place, says Dagon.

L. I.
League of Saltwater Sportsmen, Inc.
General Office:
P.O. Box 65, Flushing, N.Y. 11365

"A NON-PROFIT NON-SALARIED CONSERVATION FEDERATION
FIGHTING FOR NEW YORK'S COASTAL FISHERMEN"

AND

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

A SCIENTIFIC & EDUCATIONAL
ASSOCIATION.

Testimony Presented to The Hudson River Valley Commission Public Hearing on the Hudson River Expressway, 7:30 P.M., Thursday, June 20, 1968, at The Sleepy Hollow High School, North Tarrytown, Westchester County, New York.

Prepared & presented for the above two organizations by Dominick J. Pirone, 120 The Esplanade, Mount Vernon, New York, 10553 in his capacity as Consulting Biologist to the HRFA and the LILSWS.

Ladies & Gentlemen:

I am testifying this evening as both Consulting Biologist and a Director of both The Long Island League of Saltwater Sportsmen, Inc., and The Hudson River Fishermen's Association, Inc.. I am the only officer common to the two organizations. The officers of The League are listed at left; those of the Hudson River Fishermen's Association are to be found in the ten page brochure of that organization with which I now supply you. Copies are also available from me for any interested member of the audience.

The membership of the two organizations is shocked at the proposal under consideration tonight. Apparently little attention has been given the report of the State's own biologist, Kenneth F. Wich, especially to the section (p.3) entitled "Possible Effects of the Project". I request that the entire five page report of Mr. Wich (enclosed) be entered into these proceedings as if I had read them in full at this point.

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Dominick Pirone
Consulting Biologist

I must, as a biologist, reiterate several of the points that Mr. Wich mentions.

1. "... Fish habitat will be lost... . Four lease areas available for shellfish propagation and potential commercial fishing sites will be eliminated.
2. Siltation: - Excessive siltation and turbidity during the construction phase could affect fish production, fish movement or fishing opportunity. Any silt load could remain in the area for a considerable period of time, riding back & forth with the tides and finally settling rather than flushing out to sea. The overall effect might be temporary; but blockage of spawning runs of anadromous fish for two or three seasons, which conceivably could happen, would be serious."

I concur in Mr. Wich's projection. The nearly 10 million cubic yards of fill involved could, through siltation and turbidity,kill the Hudson River. If HRVC approves this project, it will be party to the very possible death of the Hudson River. Is this what you were set up for? I think not.

It is my information that a budget cut early this year resulted in the dismissal of HRVC's ecologist. As I understand your mandate, you are not legally empowered to be concerned with the River itself at all. Supposedly, this is the function of the Health Department. Yet in the May 27, 1968 letter of Dwight F. Metzler , Deputy Commissioner of the Dept. of Health, to Mr. J. Burch McMorran, Commissioner, Dept. of Transportation, the fisheries of the Hudson River are given no mention whatsoever. We refuse to be so ignored by the officials of the State of New York.

Also, unfortunately, in its May 1968 report entitled THE HUDSON RIVER EXPRESSWAY and THE HUDSON RIVER EXPRESSWAY PARK, The Dept. of Transportation, on p.27, under ECOLOGICAL CONSIDERATIONS, chose to ignore Mr. Wich's section on POSSIBLE EFFECTS of the PROJECT. They reproduced, instead, his RECOMMENDED MEASURES to MINIMIZE EFFECTS of the PROJECT. They conveniently left out his last paragraph of even this section which starts:

> "The above recommendations have been discussed with representatives of the Department of Transportation ...."

I wonder if"discussed" might not be a misprint for "dictated"?

My two organizations strongly object to the "highway mentality", a phrase of the U.S. Secr. of Agriculture, dictating our environment. Our (HRFA) President has said, and I fully concur:

> " A highway engineer has as much right to operate on the Hudson as a foot doctor does to attempt a heart transplant."

The rest of this May report by the engineers who plan to spend our money and ruin our River is equally appalling in its utter disregard for the natural resources of the Hudson River. I would be happy to point this out on a page by page basis to anyone who desires to review this document with me.

We fishermen, scientists, writers, and conservationists intend to stop the engineer's domination of our environment now: we are starting with this project. We have planned a lot more effective courses of action than testifying before a Commission that has no power whatsoever. We want the Ottinger Bill on the Hudson River enforced. We want to see the Interstate Compacts come into being & be supplied with teeth to keep our River useable.

What is happening to the rivers of America is clearly set forth in the magnificent article by Robert H. Boyle (a Director of HRFA) entitled: AMERICA DOWN THE DRAIN. It was originally published in SPORTS ILLUSTRATED, November 16, 1964. I enclose a reprint from the April 1965 issue of READER'S DIGEST. It includes the special statement by the Honorable Stewart L. Udall which is entitled: "HIS ANGER IS JUSTIFIED". His anger is our anger. I request that this article be reprinted in full at this point as if I had read it verbatim.

What should be done about the environmental plight of America is fully stated in Robert H. Boyle's masterpiece: HOW TO STOP THE PILLAGE OF AMERICA. This article, of which Time, Inc. had to produce 20,000 offprints to answer the mail it generated, is enclosed. I request that it be reprinted in full as if I had read it at this point. If Boyle's advice were taken as regards the Hudson, we would not need to be here tonight.

We feel confident that we can block the engineering nightmare proposed for the Hudson under the terms of the "ENDANGERED SPECIES ACT" (Public Law 89-869, signed by President Lyndon B. Johnson on October 15, 1966. Details of this are contained in the eleven page testimony of Ronald R. Dagon, ecologist on the professional staff of THE HUDSON INSTITUTE, Croton, N.Y. A copy is enclosed and I request that it be made a part of the hearing at this point as if I had read it now in full. Mr Dagon, like Robert Boyle, is a founding Director of HRFA.
The TIME ESSAY for May 10, 1968 states in part:
Title: THE AGE OF EFFLUENCE

> "The biggest need is for ordinary people to learn something about ecology, a humbling as well as fascinating way of viewing reality that ought to get more attention in schools and colleges."

I ask that this essay, enclosed, be printed at this point in my testimony.

For the edification of the HRVC and the public at large, I ask that HRFA member Dr. Gwyneth Parry Howells' informative paper, THE PRESENT BIOLOGICAL STATUS OF THE HUDSON RIVER, be printed in full at this point. Its 23 typescript pages will contribute to a fuller understanding of Mr. Wich's sketchy treatment mentioned above. Dr. Howells is with the Dept. of Environmental Medicine at New York University. Her illuminating lecture was delivered May 24th at the Hotel Commodore in New York.

In documentation of our case, and to further educate the HRVC and the public, I ask that the very significant series of articles by noted outdoor writer Fred Luks of Mt. Vernon, be reprinted as a part of my testimony. These include portraits of two commercial fishermen who are members of HRFA, Henry Gourdino of Ossining and Everett Nack of Claverack. Their livelihood, as well as that of the many other fine Americans who net their living from the Hudson, is totally threatened by this monstrous dredge & fill scheme. Other Luks' articles detail the fabulous white perch, herring, shad, striped bass, sturgeon, carp, and other fisheries of our River.

Lastly, our case is summed up by the January 14, 1968 Sunday News article, CARPS AT BUREAUCRATS FOR NOT NETTING "GOLD MINE", by Robert Boyle. He shows clearly that New York State Officialdom has failed the HUDSON RIVER for years.

I wish this last article reprinted in full also.

I hope that the HRVC will do something to reverse this trend.

Dominick J. Pirone

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

WORK FOR REPEAL OF 6305 or face the possibility of losing ALL of your fishing.

This Bill can result in the death of every aquatic ecosystem in the State. We know too little of the effects of thermal pollution to commit ourselves to MAXIMUM DEVELOPMENT.

This Bill MUST be Repealed. It negates all conservation law and leaves the living natural resources of the State at the mercy of the utility executives and engineers. They are hardly the best equipped to make such decisions. The state is also given power to condemn any lands for them. Nuclear power is an unknown area; thermal pollution has killed millions of fish. REPEAL.

STATE OF NEW YORK

AN ACT

To amend the public authorities law, in relation to the powers of the power authority of the state of New York and of New York state atomic and space development authority

IN ASSEMBLY

6305)) Introduced by February 20, 1968
Messrs. TRAVIA, WEINSTEIN, DURYEA

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section one thousand one of the public authorities law, as amended by chapter one hundred forty-six of the laws of nineteen hundred fifty-one, is hereby amended to read as follows:

REPEAL

19

§ 8. Section one thousand fourteen of such law, as amended by chapter one hundred forty-six of the laws of nineteen hundred fifty-one, is hereby amended to read as follows:

§ 1014. Public service law not applicable *to authority*; inconsistent provisions in other acts superseded. The rates, services and practices relating to the generation, transmission, distribution and sale *by the authority*, of power to be generated from the projects authorized by this title shall not be subject to the provisions of the public service law nor to regulation by, nor the jurisdiction of the department of public service [, but shall be regulated and determined under the provisions of the contracts entered into by the authority as provided in sub-paragraph six of section one thousand five of this chapter]. The provisions of the public service law and of the conservation law and every other law relating to the department of public service or the public service commission or to the conservation department or to the functions, powers or duties assigned to the division of water power and control by chapter six hundred nineteen, of the laws of nineteen hundred twenty-six, shall so far as is necessary to make this title effective in accordance with its terms and purposes be deemed to be superseded, and wherever any provision of law shall be found in conflict with the provisions of this title or inconsistent with the purposes thereof, it shall be deemed to be superseded, modified or repealed as the case may require.

REPEAL

REPEAL

20

§ 1854. Purposes and specific powers of the authority. The purposes of the authority shall be to encourage and cooperate in the maximum development and use of atomic energy for peaceful and productive purposes within the state and in the active furtherance of space activities within the state. In carrying out such purposes, the authority shall, with respect to the activities specified, have the following powers:

1. Research and development. To conduct, sponsor, assist and foster programs of research and development in the methods of production and use of atomic energy and programs relating to space activities, including the power to establish, acquire, operate, develop and manage facilities therefor.

2. The provision of services. To provide services required for the development and use of atomic energy and services required for space activities by the industrial, commercial, medical, scientific, educational and governmental organizations within the state, including the power to establish, acquire and develop facilities therefor not otherwise available within the state, and to operate and manage such facilities.

3. *Cooperation with power companies. To contract with or enter into joint undertakings with any power company, or power authority of the state of New York, or more than one of them, to*

(a) Participate in the construction and operation of experimental or developmental nuclear power facilities within the state

REPEAL

TIME & LIFE BUILDING
NEW YORK, N.Y. 10020
212 JU 6-1212

July 9, 1968

Long Island League of Saltwater Sportsmen, Inc.
P.O. Box 65
Flushing, N.Y. 11365

Dear League Members:

I am writing this letter not as an editor of *Sports Illustrated* and not as a fellow striped bass angler, but as a citizen concerned about an environmental problem that should be of definite alarm to all of you.

Specifically, I am deeply concerned over the deadly threat that thermal pollution from nuclear power poses to the aquatic environment. Several months ago I touched on this threat in an article in *Sports Illustrated*. Briefly and locally, the threat is this :

The Consolidated Edison Company will shortly have three nuclear plants in operation at Indian Point on the Hudson River. Surely all League members know of the carnage wreaked upon striped bass by the first plant there when it went into operation in the spring of 1963. Fish were left to rot by the ton on a nearby dump as the result of Con Ed's foul up and New York State's hush up, and the facts did not become public until the League's Dom Pirone and Harvey Hauptner blew the whistle which resulted in a *Sports Illustrated* article, appropriately titled " A stink of dead stripers ", and a hearing by the U. S. House Subcommittee on Fisheries and Wildlife Conservation in Washington, D. C., in May, 1965.

Besides the three nuclear plants at Indian Point, Con Ed now envisions two more nukes on the Hudson at unspoiled Montrose Point, two miles south as the crows fly. I mention crows because it was the army of crows feasting on the slaughtered fish at the dump that first prompted an investigation of the Indian Point debacle.

On May 10, 1968, I joined with Dom Pirone and several other directors of the Hudson River Fishermen's Association, Inc. in meeting with high officials of Con Ed at that company's office in White Plains, N. Y. . We did so in a spirit of genuine cooperation, in a spirit of offering to help so that the Hudson River and its fisheries would not be damaged or obliterated by thermal pollution. As you all know, the Hudson probably supplies the bulk of the striped bass caught in the greater New York, Long Island and Jersey area.

To be frank, we found ourselves confronted with not only appalling ignorance on Con Ed's part but by an arrogance we have yet to fathom. Larval and juvenile and mature striped bass can take water that is only so hot. The same holds true of organisms upon which they feed. But when we pointed out to Con Ed's representatives that temperature changes in the Hudson could do severe harm to the river system and to striped bass, we received the most astonishing reply from Mr. Arthur Pearson, a senior engineer for the company. Mr. Pearson said that Con Ed would not have to cool the hot water discharges down to a certain degree because Con Ed was going to get New York State to reclassify the Lower Hudson from tidal saltwater, which it is, to " freshwater stream". This statement is an affront to ecological truth, to the English language, indeed to any concept of nature or reality as you and I know it.

It is one thing for Con Ed to attempt to argue that thermal pollution would not hurt or alter the ecology of the Hudson River,(and here, I am sure, we could bat their ears off scientifically), but it is quite another thing, morally, ethically, for the company to try to get the state to change a water classification to suit its own convenience. Would Con Ed call Mt. Everest a valley ?

I won't kid you. The fight to halt thermal pollution of the Hudson is going to be hard. The fight may be more difficult and tedious than the Storm King battle, (which still goes on, four years after the nilly-nellies said, " Ah, you can't beat City Hall "), but I ask you, all League members, to enlist now. Make the Hudson River your thermal battleline. Let the League display the leadership it has in the past. Join with the Hudson River Fishermen's Association and with your own Dom Pirone and Harvey Hauptner to make sure that your sport continues, not only for your own day, but for your children's as well. Let us see to it that the river is unharmed and that ecological fact is not twisted, bent, or distorted. You must join in, and knowing the League, I know you all will. And in the end, you will win, because, as you have learned already through your leadership, you can beat City Hall.

My best fraternal regards and tight lines, Robert H. Boyle

DEDICATED TO THE RESTORATION AND PRESERVATION OF THE NATURAL RESOURCES OF THE HUDSON RIVER

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

120 The Esplanade
Mount Vernon, N.Y. 10553
July 6, 1968

Senator Edmund S. Muskie, Chairman,
Subcommittee on Air and Water Pollution,
of the Committee on Public Works.
Senate Office Building
Washington, D.C.

Dear Senator Muskie:

At the June meeting of the Board of Directors of the Hudson River Fishermen's Association, Inc., it was unanimously voted to request that you bring your hearings on thermal pollution to New York, particularly Westchester County.

Our meeting took place shortly before Governor Nelson Rockefeller hurried his nuclear power act through the New York State legislature without benefit of promised public hearings. Our unfortunate state is now committed to an eight billion dollar, maximum rush-expansion of thermo-nuclear electrical generating plants. The need for you to develop the facts of the " Power Play " in New York State is therefore even greater and more urgent than it was when our directors met.

Several directors of this Association were responsible for blowing the lid off the Indian Point Thermo-Nuclear Plant fish kills of 1963. Though millions of fish were killed there, and thanks to Congressional hearings, the state rocked, these same directors feel that 1963 was small potatoes compared to what the governor and the utilities are planning now.

For instance, the Consolidated Edison Company of New York, which runs the Indian Point Plant, plans five plants on the Hudson River, four on Long Island Sound, and an undetermined number off Staten Island.

Our directors met with Con Ed May 10th; company officials made clear that they had no intention of attempting to eliminate the tremendous thermal pollution that the giant plants will cause.

Indeed, Con Ed's senior engineer said that the company was planning to get the state to reclassify the lower Hudson from "tidal saltwater", which it is, to "fresh water stream", so that Con Edison would not have to meet stricter requirements on thermal pollution.

We are particularly concerned that the five plants at or near Montrose

HUDSON RIVER FISHERMEN'S ASSN. INC.
DEDICATED TO THE RESTORATION AND PRESERVATION OF THE NATURAL RESOURCES OF THE HUDSON RIVER

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

Point, where the Hudson narrows dramatically, may result in a thermal "pollution plug" which might end forever the huge spawning runs of anadromous fishes such as striped bass, shad, Atlantic sturgeon, etc.. This one complex of thermo-nuclear plants will have better than fifteen times the capacity of Indian Point Plant No. One which caused such massive destruction at this spot in 1963. The Hudson River in this area has the characteristics of a eutrophic brackish lake; it behaves as a brackish water lake rocked north and south by the influence of the tide. Dye studies have shown no net movement at stations from Kingston south; there is little opportunity for the volume of water in this area to be cleansed or cooled by either a freshwater or sea water inflow.

Elsewhere in New York State, the Niagra-Mohawk and Central Hudson power companies plan other thermo-nuclear plants on the Hudson River, and from what we have been able to learn, thermal pollution will be a problem. Long Island Light and Power is planning seven plants for their territory, while New York Steam, Gas and Electric is planning a monster for Cayuga Lake, home of Cornell University.

All this is being done in the midst of an abominable lack of basic ecological facts.

Sir, please come to New York; we need you.

Meanwhile, I ask that our letter be made a part of the record of your present hearings and that a copy of the record be fowarded to me when completed.

Thank you.

Very truly yours,

Dom Pirone

Dominick J. Pirone,
Consulting Biologist &
Corresponding Secretary, HRFA, Inc. .

encl.: article, " A stink of dead stripers"
by Robert H. Boyle.
Sports Illustrated
April 26, 1965
Volume 22, No. 17
pps. 81, 82, 84.

cc. Congressmen Ottinger and Dingell, Secretary Udall, President Johnson.

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

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CONSERVATION/*Robert H. Boyle*

A stink of dead stripers

The Storm King fight rages over the Hudson and a conservationist raises questions about missing pictures and spawning grounds

Take a good look at the picture below. It shows a mass of dead striped bass left to rot by the Consolidated Edison Company on a dump near its Indian Point power plant on the Hudson River. Officials of the New York State Conservation Department not only have denied that such pictures existed, they have hushed the fact that pictures were held by the department itself. Starting on May 10, this hush-up and other revelations about Hudson River fish will be the subject of an investigation by the Fisheries and Wildlife Conservation Subcommittee of the U.S. House of Representatives. The testimony to be given is almost sure to embarrass Con Ed, the Conservation Department and its boss, Commissioner Harold Wilm, and even Governor Nelson Rockefeller.

To the anger and dismay of commercial fishermen, sportsmen and conservationists, Governor Rockefeller has been backing the construction of another Con Ed power plant 15 miles north of Indian Point at Storm King mountain on the Hudson. Governor Rockefeller and Con Ed won a round last month when the Federal Power Commission licensed the Storm King plant—and possibly licensed the decimation of the rest of the Hudson's striped-bass population.

Led by the Scenic Hudson Preservation Conference, the conservation groups have bitterly fought the Storm King project on a number of grounds. For one, the project would violate state park lands; for another, it would scar more than 20 miles of Putnam and Westchester counties with high-tension towers. At full capacity the plant will be able to suck up 12 billion gallons of river water a day, and since, according to the latest study, Storm King sits squarely in the middle of the Hudson's bass spawning grounds there is excellent reason to fear for the fishery. These grounds furnish bass to Long Island Sound and northern New Jersey waters. On the northeast coast, sportsmen alone spend $45 million a year in quest of stripers.

The Fisheries and Wildlife Conservation Subcommittee is holding the investigation at the request of Richard Ottinger, a Democrat representing Putnam and western Westchester counties. Last January, Ottinger introduced a bill into the House calling for the establishment of a Hudson Highlands National Scenic Riverway. The bill, which has backing from Democrats and Republicans, would, among other things, prohibit the construction of power installations along a 40-mile stretch of the river from just north of New York City to beyond Storm King. When Ottinger submitted his bill, he also asked the FPC to delay any decision on licensing Storm King until Congress had a chance to decide on the riverway. The FPC—an autonomous body of five men appointed by the President—rejected the request and last month licensed the plant after hearing only one fishery witness, a biologist retained by Con Ed.

Specifically, the Fisheries Subcommittee will determine whether or not federal and state officials charged with the protection of fish have fulfilled their duties at Storm King and Indian Point. There are indications that they have not. In the first half of 1963—the year the nuclear Indian Point station began full operation—there was an extensive kill of fish. The exact cause of the kill has never been made precisely clear, but the fish apparently were attracted by warm water discharged from the plant and then were trapped beneath a dock. Some sportsmen learned of the kill when great numbers of crows began concentrating at the dump. On June 12, 1963 Dominick Pirone, a graduate student at Fordham and consulting biologist to the League of Saltwater Sportsmen; Harvey Hauptner, then the League's conservation chairman; Fred Luks, an outdoor columnist; and Arthur Glowka, a free-lance writer, visited the Indian Point plant, and on that day, Pirone says, "We saw 10,000 dead and dying fish under the dock. We learned that Con Ed had two trucks hauling dead fish to the dump when the plant was in operation."

Pictures of piles of dead fish were taken by sportsmen and at least one member of the Conservation Department,

continued

A LOCAL SPORTSMAN EXAMINES DEAD BASS AT DUMP NEAR INDIAN POINT IN 1963

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

and other sportsmen who happened to see them were horrified. Pictures were called in by the Conservation Department's Poughkeepsie office, and then sent on to its Albany office. Before the controversial pictures started disappearing, Dom Pirone saw some. One that sticks in his mind shows a pile of dead striped bass a dozen feet high. In the December 1963 issue of *The Southern New York Sportsman*, Editor Ted Keatley wrote, "I have a print of a picture taken at the dump. This was forwarded to me with the following commentary: 'Enclosed is a photo taken one evening in early March and showing just one section of the dump. The fish seen here were supposed to be about one or two days' accumulation. They were piled to a depth of several feet. They covered an area encompassing more than a city lot.' " Earlier Keatley had estimated the kill at one million striped bass, but then Assistant Commissioner W. Mason Lawrence of the Conservation Department tut-tutted that figure as unrealistic in a letter to Keatley, and instead pegged the peak kill at only 800 stripers a day, "mostly of rather small fish." He made no mention of pictures.

Last December, in an attempt to get some straight answers about Indian Point, Pirone and Glowka went to the Poughkeepsie office, where they spoke to Warren McKeon, the regional supervisor, and Ken Wich, the regional fish manager. Both men denied that they had ever seen any pictures of the kill. They offered to open up the office files on Indian Point, but when Pirone later wrote a letter asking to examine the records, Wich wrote back that "Mr. McKeon has been advised by Albany that, at this time, we cannot release Departmental reports to the public concerning matters still under investigation." In response to this, Pirone wrote Wich: "Personally, I have heard direct contradictions from several sources as to some of the statements that you and Mr. McKeon made to us on 23 Dec. The question of pictures of the horrible kills at Indian Point passing through the Poughkeepsie office is in particular dispute." Wich never answered.

A few weeks ago State Senator R. Watson Pomeroy, a Dutchess County Republican, decided he wanted to see the hushed-up pictures. Senator Pomeroy, a former chairman of the Joint Legislative Committee on Natural Resources, is a man of some consequence in the state.

"Commissioner Wilm gave me permission to see them," Senator Pomeroy says. "I wrote to him asking permission to see them, and he wrote me in return giving me permission." Senator Pomeroy was shown two black-and-whites taken in February 1963, at the start of the Indian Point kill. "They did show fish which had been killed," the senator says. "They were fairly sizable fish kills—a couple of thousand fish. They were brought from the Poughkeepsie office and shown to me at my house."

The hush-up of the Indian Point pictures has angered those fighting Con Ed at Storm King. For its part, Con Ed has played down Indian Point as it seeks to dig into Storm King. The company says only thousands—150,000—of fish were killed, and it declares that the big kill stopped in late June 1963, when screening was put beneath the dock. The Conservation Department also says fish are no longer being killed in any great number. Con Ed has the matter under study, but meanwhile kills still occur, mostly of smaller fish that get through.

In addition to Indian Point, the Fisheries Subcommittee will investigate the testimony given before the FPC on Storm King by Dr. Alfred Perlmutter, a former employee of the Conservation Department who is now an associate professor at New York University and a Con Ed consultant. Briefly, Dr. Perlmutter testified that he could "almost guarantee" that the proposed Storm King plant would have "little effect" on fish eggs. The "best" spawning grounds for striped bass, he said, were "much farther up river." Later he added, "The last study on the Hudson River was made in 1938, and it hasn't been done since."

No other fish experts were present when Dr. Perlmutter testified before the FPC—which had published notice of the project without naming Storm King as the site in a newspaper in out-of-the-way Goshen, N.Y.—but when a number of organizations interested in fish resources heard about his statements, they sought to join Scenic Hudson in the fight by asking the FPC to reopen the hearings. The gist of their protests was that the New York State Conservation Department had published a study of the Hudson stripers not in 1938 but in 1957. Further, this study indicated that the fish spawned in the vicinity of Storm King. Moreover, the two biologists who had conducted the study, Lewis Miller and Warren Rathjen, had been hired for that job by none other than Dr. Perlmutter. Among the groups which sought to reopen the hearings to allow other experts to testify were the Cortlandt Conservation Association up on the Hudson; the village of Freeport on Long Island; the Town of Hempstead, which has a population of nearly a million; the Hempstead Town Lands Resources Council, with 30,000 members and affiliates; the Nassau County Fish and Game Association; the Long Island [commercial] Fishermen's Association; and the National Party Boat Owners Alliance, composed of captains who have direct financial stake in the irreplaceable Hudson fisheries.

Before granting its license to Con Ed the FPC could have reopened hearings to admit extraordinary testimony. But for all the angry letters and petitions that went to the FPC demanding a rehearing, Con Ed sent a reply to the commission claiming rebuttal on Storm King was too late and that "allegations" about Indian Point were "irrelevant." On March 9 the FPC, in a 3-to-1 vote, agreed to grant Con Ed a license. The Indian Point kill was dismissed by the FPC in a footnote as "outside the jurisdiction of this Commission." As for Dr. Perlmutter, the FPC has endorsed him as "an outstanding ichthyologist." Charles Ross, the dissenting commissioner, wrote: "The continued existence of this [Hudson fish] resource is one of the primary issues in this case, and I, for one, am not willing to base an ultimate conclusion upon testimony about which serious doubts have arisen."

A hearing was set for May 4 to determine the route of the high-tension towers and the type of screen to be placed over the Storm King intake tubes. On April 1 the Conservation Department announced Con Ed would finance a $150,000 three-year study of Hudson River fish. In view of the fact there is no fish screen that can exclude the tiny striper eggs, the May 4 session promises to be meaningless.

Fortunately, the Fisheries Subcommittee will bare all the facts. Perhaps, ironically, the Hudson River, the living river, may yet be saved by dead fish long thought buried in an obscure dump and by pictures buried in Conservation Department files.

END

120 The Esplanade
Mount Vernon, N.Y. 10553
July 12, 1968

Congressman John D. Dingell
House Office Building
Washington, D. C. 20515

Dear Mr. Dingell:

This is a long overdue note of appreciation for all that you have done to protect the natural resources of our country. Your name comes up at nearly every meeting we hold in connection with something new that we have heard you have done in the interests of those citizens who are concerned with maintaining a quality environment.

I am still awed by your conduct of the Congressional Hearings of May, 1965. I shall never forget you saying:

> " Any utility company that thinks it is going to dictate to the Congress of the United States has another think coming. "

Consolidated Edison Company of New York has another think coming in 1968 and I pray that you will help administer it. As you may know, the "Ottinger Bill" on the Hudson River has been stalled by its major opponent, Governor Nelson Aldrich Rockefeller. He has gone so far as to ram through a "Power Authority" Bill in N.Y.S. without benefit of public hearings that we were all screaming for. The Rocky Power Bill is just that, an absolutely disasterous piece of legislation that calls for MAXIMUM development of thermal pollution producing nuclear power plants and completely negates all conservation law in this state. I know it is hard to believe that this could happen in The United States of America, but it just did in our unfortunate Empire State.

Consolidated Edison is now implementing a scheme, that, in my opinion as an ecologist, will result in a thermal "plug" at Montrose, N.Y.. The Hudson River will die. I hope that you will not allow this to occur.

We were all much impressed by what you and Mr. Ottinger did for the magnificent Hudson River, and for us, the people who depend on it, in 1965 and 1966. You both certainly completely fulfilled your duties as superior legislators, responsive to the needs of the people and the natural resources of our country. But now we must ask you to go beyond normal processes and do something, anything, to prevent this murder of our beloved Hudson River by Governor Rockefeller and his utility buddies.

The several enclosures serve to document the above. Thank you.

Respectfully yours,
Dominick J. Pirone

120 The Esplanade
Mount Vernon, N.Y. 10553
July 12, 1968

Congressman Richard L. Ottinger
(by hand)

COPY

Dear Mr. Ottinger:

Once again, the situation on the Hudson River has been pushed to the brink of disaster by the officials of the State of New York working in concert with the utilities.

Assembly Bill 6305 (Senate version same, S5746) was rushed through in the closing days of the legislature by Governor Nelson Aldrich Rockefeller, completely ignoring the screams for public hearings that concerned scientists and citizen-conservationists threw up to Albany.

This "Power Authority" Law is beyond belief; we cannot, we shall not live with it. It calls for MAXIMUM development of thermo-nuclear power plants in this state. We operate these today in a nearly total void of ecological knowledge concerning their effects on the environment. What we do know is that they attract and kill fish by the tons.

This "Power Bill" voids all public and conservation law. It's hard to believe that such a move could be made in this day and age, but Gov. Rockefeller made it. It gives the state the right to condemn anything and turn it over to the private utilities for their profit. This is clearly unconstitutional to me. They can cry "need" for electricity all they want; they generate the need themselves and they are going far beyond their "needs" with these huge complexes. New York will become the electric power capitol of the world if they have their way; it will also become the only northern state lying in tropical waters.

I beg you to read as much of the enclosed as you possibly can. Senator Muskie must be encouraged to bring his thermal pollution hearings to Westchester before the November elections. We must make public the ecological suiciede that the present officials are pushing us to. I could detail case after case that has developed on the Hudson. Many are covered in the attachments. I will write you about others in the coming weeks.

If we are to maintain even minimum quality in our natural environment, action must be taken now. Next year is clearly too late.

Your help and encouragement over the past several years has been much appreciated by all people who care about the natural resources of these United States. I regret that we must approach you so frequently on these matters, but there is nowhere else to turn if we want action instead of platitudes. If the Hudson is to survive, it can only be at your hands.

18-P

Respectfully & gratefully yours,
Dominick J. Pirone.

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RIVERS ARE TREASURES

CONSERVATION

By SETH GORDON
Vice-President, North American Wildlife Foundation

The Federal Power Commission has materially improved its public stature in recent years because it has been giving recognition to natural resources and esthetic values. It now requires all applicants for hydroelectric projects to include exhibits relating to conservation and the enhancement of fish and wildlife in their exhibits.

The Commission's hand was greatly strengthened last year by a decision (June, 1967) of the U. S. Supreme Court, delivered by Mr. Justice Douglas. The fishermen especially, both sport and commercial, will forever be among the beneficiaries.

The case involved the High Mountain Sheep Dam on the Snake River, between Idaho and Oregon, the site a mile upstream from its confluence with the famous Salmon.

An FPC examiner had endeavored to dispose of the long-standing issue of Federal vs. private development.

The Commission, after weighing all the evidence presented by two applicants, awarded the license to a joint private venture group of four power companies to construct the project.

Secretary Udall, Department of the Interior, appealed the decision to the Supreme Court, urging postponement while means for protecting the salmon and other fisheries were being further studied.

In preparing the opinion the Court cited the famous quotation from Mr. Justice Holmes, who said: "*A river is more than an amenity; it is a treasure.*"

"The destruction of anadromous fish in our western waters is so notorious," said the Court, "that we cannot believe Congress authorized their ultimate demise . . . these factors of the anadromous fish and of other wildlife may indeed be all-important in light of the alternate sources of energy that are emerging."

The Court, to the delight of conservationists, remanded the case back to the Federal Power Commission for final disposition of the matter, thereby greatly strengthening its hand in matters pertaining to our natural resources and recreational values.

They're Making It Hot for Fish

By GEORGE LAYCOCK

The long-range effects of temperature fluctuations on aquatic life must be determined . . . and soon!

Some forecasters predict benefits for the fisherman as a result of increased water temperatures. Conservationists are not sure

AS IF fish do not already have enough to contend with in sewage, silt, oil, detergents, industrial wastes, oxygen shortages, and competition from natural predators they now face a growing threat from abnormally high water temperatures. The truth is, they're making it hot for fish—maybe too hot.

This "thermal pollution" is effecting some of the cleanest of waters, and the dirtiest, from coast to coast. Higher temperatures can, and in some cases already have, warmed public waters to the point where life for game fish is difficult if not impossible. One such instance occurred on Kentucky's Green River, one of the finest bass and musky streams in mid-America.

In western Kentucky there is a village on the Green known as Paradise. Here the TVA erected one of its biggest electric power plants. The cooling water of the Green River was one of the reasons this site was chosen. Another was the vast store of coal which giant strip-mining machines could remove by literally uncovering Muhlenberg County. With the power plant operating, and the strip-mining machines gnawing away, a steady stream of crushed coal was fed into the boilers. And a steady stream of hot water poured out of the plant and into the Green River.

Fishermen soon learned that fishing these waters was no longer productive. The fish were gone. "They moved out," says Bernie Carter, Chief *(Please turn to page 12)* of Fisheries for Kentucky's Department of Fish & Game, "as the water warmed up. Even if they did move back during the winter, when the water was cooler, nobody knew it because people gave up fishing that part of the Green. It was a desert for fish."

A research team determined that the hot water formed a plug from surface to bottom. Water temperatures in summer rose well above 100 degrees for eight miles downstream, and to 98 degrees for two miles upstream. What was a poor fish to do? Bass and muskies and their neighbors got out of there and were lucky they had a place to go. To those who claimed that fish can stand temperatures of 94 degrees or more, Bernie Carter answered, "Sure they can *stand* it, for a little while. I can stand 120 degrees too, but I don't feel good or function well." The added heat was something entirely new to the fish in the Green River. "No stream in Kentucky," Bernie Carter said, "runs above 90 degrees in midsummer."

In spite of urging from fisheries people, TVA had insisted that their power plant operation on the Green River would not adversely affect the fish. Only recently have they reluctantly begun to build cooling towers which may bring back fishing in those miles of the abused Green River.

Meanwhile, in the Northwest, fisheries specialists fear for the future of salmon that swim up the Columbia River to spawn. Rising temperatures in this stream are due in part to the great areas of slack water behind the big dams, and also to heat from nuclear reactors.

When Columbia River waters were cold as nature once kept them, there lived in the river some bacteria which caused "columnaris," a deadly fish disease. The losses were small, because the bacteria were rare. In recent years they have flourished in the warming river and killed off large numbers of salmon.

Future plans for the Columbia basin include additional nuclear plants plus other developments, all of which are expected to bring water temperatures up to 85°F., or at least 5°F. above the highest temperatures salmon and steelhead can survive. Unless Washington and Oregon step in to dictate that temperatures must remain below a safe level, perhaps 68°F., the famed Columbia River fishery could be on the way out.

Heat can be added to streams, lakes, and estuaries from several sources. The biggest single threat today is the bustling power industry. This is especially true with the more recent feasibility of atomic fueled power plants.

Although the United States has only 6 percent of the world's population, we produce about 40 percent of the world's electric power. How fast is this production expected to climb? The estimates of the Federal Power Commission are that in the 20 years between 1960 and 1980, United States power production will treble.

These are two major reasons why the atomic powered electric generating plants may cause more trouble with thermal pollution. Even from a coal-powered generating plant, as much as two-thirds of the generated heat goes to waste. With atomic power only about one-fourth of the heat can be utilized. The remaining heat is carried off by the circulating water. In addition, power plants are becoming steadily larger. The more power produced at a plant, the more fuel required, and the more heat left over to return to the cooling body of water.

To the planners in the power industry, atomic energy has become the bright new plum. More and more in recent years King Coal has been losing economic battles with the powerful little uranium atom. This was indicated recently in a speech delivered by the U.S. Atomic Energy Commission's Rafford L. Fulkner before a "Nuclear Forum For Financial Managers" held last year in New York City.

"Nuclear power growth estimates," said Fulkner, "even those prepared by the more optimistic forecasters, have required substantial upward revision in each of the last few years to keep pace with the growing volume of nuclear power plant orders." Fulkner added that anyone hoping to keep track of the rising tide of nuclear power plants in the country should, ". . . keep their crystal balls well polished."

At that time in 1967, there were sixteen operating nuclear power plants in the United States, with a capacity of 3 million kilowatts. But at the same moment, another sixty-seven such plants were in various stages of planning or construction and these would add more than 53 million kilowatts to the atomic power production.

The list of states that either have or are in the process of getting atomic power plants number twenty-four. They are spread from coast to coast, with special concentrations along the eastern seaboard and in the Great Lakes region.

Any major body of water in the country could, in the coming years, become the cradle of a new nuclear power plant churning its overheated waters back into aquatic habitats, most of which are already burdened with pollutants.

Just what effect this can have on fish life is a big question mark that keeps a lot of concerned people scratching their heads. Some alarmed wildlife workers foresee only ill effects from radical changes in stream temperatures. It stands to reason that fish that have evolved over the eons and adapted to their environment might suffer stress from radical changes in their habitat.

But on the other hand there are power company executives, usually engineers rather than biologists, who go so far as to refer to the added heat as "thermal enrichment." It is their contention that the added temperatures may actually increase the productivity of the waters especially in estuaries. Biologists insist that we know too little to endorse the "thermal enrichment" theory just because it sounds comforting. The question is how comforting—or discomforting—the added degrees are to the fish.

It is the depressing sub-lethal effects of added heat in water that we now need to figure out, and such research is barely underway. The truth is that we've turned the heat on before we knew what to do about it. The U.S. Fish and Wildlife Service now has water quality criteria laboratories in the early phases of operation at Duluth, Cincinnati, and West Kingston, Rhode Island. The aim at such centers is to learn precisely what environmental conditions must exist in water if various aquatic species are to prosper there. So far, we must still operate largely on educated guesses. The Federal Water Pollution Control Administration has set up an Advisory Committee on Aquatic Life, which has established temporary guidelines for protecting warm-water fish in inland waters. Most such authorities begin to worry about the warm-water fish when temperatures are permitted to rise much above 90 degrees F.

Partly because of the shortage of information available, at least one power company has set up its own aquatic research program.

Several years ago the powerful Connecticut Yankee Atomic Power Company proudly announced that it would soon erect, on the banks of the famed Connecticut River, the biggest atomic power plant in private ownership.

Scarcely had the plan been announced when Conn Yankee learned that, in addition to splitting the atom, it was about to split community relations wide open. It is a fact of life that public utility companies have become highly sensitive to public opinion.

Led by retired attorney Julian D. Rosenberg, local citizens began asking their questions. First they wanted to know if the darned contraption would blow up or leak radioactive waste materials into the environment? Fears were quieted by explanations of all the government monitored safety precautions.

But there was still the question of how much hot water the plant would turn back into the Connecticut River. This question was batted from side to side in two lengthy sessions before the Connecticut Water Resources Commission. No one had the facts. What Conn Yankee proposed to do was return 21 to 24 million gallons of water an hour to the river. But it would come back as much as 18.4 degrees hotter than when withdrawn.

The American shad is the Connecticut River's greatest claim to fame among anglers. The shad may reach weights up to 10 pounds or more, but commonly they come in weights ranging from 1½ to 5 or 6 pounds.

The Connecticut River, in the heart of the shad's spawning territory, is perhaps the most famous of all shad fishing waters along either coast. Biologists compute that 1¼ million shad come into the river during a frantic run of six weeks or so beginning in late April or early May. The size of the run may vary considerably from year to year, but when it reaches its peak fishermen crowd into such historic fishing holes as the waters below the Enfield Dam. In a single 100-yard stretch, it is estimated, anglers catch some 25,000 shad each year on spoons and jigs drifted in the current or trolled. They can be taken also by casting or with the wet fly. The Connecticut Board of Fisheries and Game estimates that fishermen catch 40,000 to 50,000 shad from the Connecticut during an average year.

The young fish move out of the Connecticut in late summer to live at sea. Fisheries specialists were especially concerned about the ability of the young fish to move past the flow of warmed water at Haddam Neck. The water is considerably warmer as they swim downstream than it was when the parent fish first began to move upstream.

Studies of the water temperature to date have shown what the engineers refer to as a "plume" with warm water spreading over the top of the stream losing more heat the deeper it reaches and the farther it spreads from the plant. Beneath this plume there is said to be a layer of river water at its normal seasonal temperature.

As fisheries chief Wild has pointed out, the State Board of Fisheries and Game would have preferred from the beginning that Conn Yankee simply install sufficient cooling equipment to put the waters of the Connecticut back as they found them. But it was Conn Yankee's official feeling that such cost should not be assumed until the need was proved.

With this conviction guiding it, the company agreed to cover the cost of the research. Then, if it was found that the fish were being harmed by the warm water, Conn Yankee further promised to correct the situation by installing water cooling systems.

Whatever the outcome, the fisheries research on the Connecticut puts Conn Yankee in business with the State Board of Fisheries and Game. It is an unusual arrangement. The industry using the resource, in this case the Connecticut River, must determine whether or not it is endangering the fish resource. In the process it will finance the first really thorough study of fish life in the Connecticut.

In self-defense the company imported squadrons of highly respected authorities to testify during the hearings. Among them was Yale University's Dr. Daniel Merriman who now heads up the river research project based at Essex Marine Laboratory in charge of day-to-day research. Hydrologist William A. Boyd, Jr. who built the laboratory, and Lyle Thorpe, until recently Director of the State Board of Fisheries & Game who have a small staff of biologists working with them. The organization does not, however, end with this group and its laboratory on the Connecticut. The staff of Essex Laboratory is accountable to the star-studded individual advisory board of five aquatic scientists from around the country. This board councils Dr. Merriman and his research group, and it is to this group of advisors that the Essex Laboratory answers and not to Conn Yankee.

Five monitoring stations within an 11.6 mile segment of the river near the plant outlet, collect regular readings of water temperatures and dissolved oxygen.

Cooperating with state fisheries people, the Essex Lab staff began the eight-year study in 1965 by tagging 10,000 adult shad on their up-river trip. Fishermen eventually turned in tags from one out of four of these fish. From this information the technicians began to understand somewhat better the number of fish using the stream, and the speed of their trip. By 1966, the fisheries specialists were equipped to embed transmitters in test fish, then follow them electronically for several days to learn what shad do throughout their stay in the Connecticut River.

The fact that the big power combine was required to undertake this research project indicates the approach that might have to be taken elsewhere when a new plant threatens the environment. Few large industries volunteer to spend such sums (the Essex Lab contract cost Conn Yankee about $100,000 a year) out of the goodness of their corporate hearts. But now that the plan is underway the officials of Conn Yankee admit that this approach is good for them. "We may come out completely wrong in our belief that we're not going to harm the fish, and we realize it. If we find the temperature is hurting fish life, we will probably try first increasing the flow of water through the intake canal to dilute the hot water and reduce the temperature."

If this would not reduce water temperatures enough, Conn Yankee would have no choice but to turn to cooling towers. Such towers are certain to become increasingly common on many waters, as the number of power plants grows along the streams. There are two types of cooling towers possible for the job, and both are costly enough to keep power companies fighting the idea. Most common is the open-cycle tower which sprays warm water from the top, so drafts of air from the bottom can cool it. This system sacrifices about one-fifth of the water to evaporation which sometimes blankets the surrounding countryside in a thick fog. It is also incapable of cooling water to temperatures as low as the alternative structure does.

Most costly is the closed-cycle system which employs huge, power driven fans to cool water that is constantly recirculated. It eliminates the fog hazard and conserves the water otherwise lost to evaporation.

Other planners in industry might heed the recent comment of Northeast Utilities Chief of Environmental Sciences & Services, Dan Hedden. "The time has come," Hedden believes, "when plans for any new plant are not complete until its effects on the environment are considered, and this part of the study begins from the moment the site is selected."

Thermal Loading
New Threat to Aquatic Life

By Dr. J. A. Mihursky, Chairman, Department of Environmental Research, University of Maryland

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DOMINICK J. PIRONE
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Thermal loading is a relatively new term to pollution biologists. It is even newer to the general public, though it has received considerable attention in recent months—from legislators and industry as well as researchers. Thermal loading is a man-imposed, excess rise in waterway temperature which may gravely threaten aquatic life involved.

Product of Leaping Electricity Need

Although there are many causes of changed temperature regimes in the aquatic habitat—such as irrigation practices, dams, and industrial waste heat—one specific area, the steam electric industry, appears to pose the greatest problem.

Our present method of producing electricity with steam electric stations is a relatively inefficient operation. The potential energy of our fuels is not converted 100 per cent into electrical energy. Energy is lost in the form of heat and must be dissipated. Ideally this waste heat should be released directly into the atmosphere. However, the power industry has found it more economical to use water as a middleman. Large volumes of surface water are pumped into steam electric stations where waste heat is added and finally the heated water is discharged back into a waterway.

In the United States in 1958, 90 billion gallons of water per day were required for cooling purposes by steam generating utilities. Individual installations were generally small, having less than 500 megawatt capacity (1 MW = 1,000 Kilowatts) and required at most a few hundred thousand gallons of water per minute for cooling. At that time the rule-of-thumb judgment was that as population doubled by the year 2010 there would be a quadruple increase in electricity demand.

New estimates in 1965 indicated that electricity demand would increase 32 times by the year 2010. And since then estimates have soared to increases as high as 256 times. It has been predicted that the advent of the electric automobile will automatically double our electricity requirements regardless of where we are on the electricity projection scale. Thus, electricity production may amount to two billion MW by 1980.

If engineering designs remain the same, this production will need 200 billion gallons of cooling water per day. These water requirements amount to one-sixth of the total volume of fresh water that runs off the land mass per day in the United States. Discounting flood flows which occur about one-third of the year and account for two-thirds of runoff, the steam electric station industry will need about half of the total runoff for cooling purposes during the remaining two-thirds of the year. The problem is even greater in certain heavily populated and industrialized northeastern U.S. watersheds such as in Delaware where, due to re-use, over 150 per cent of freshwater flow passes through the various steam electric stations during summer low-flow periods.

Power plants generally increase water temperatures 10-30° Fahrenheit above normal, with discharges commonly reaching 100-115° during summer months. Temperatures of one northeast U.S. river have reached 140° F—a level 40-50° above the tolerance of most aquatic organisms.

Excess Temperature Lethal

Temperature is now known to be an important lethal, directive, and controlling factor in the aquatic habitat. Laboratory experiments have demonstrated that increases of only a few degrees in temperature, especially under summer test conditions, may cause 100 per cent mortality among aquatic animals. Such low tolerance to abnormal summer temperature increases is especially critical to those northern hemisphere animals located near their southern zoogeographic limit of distribution.

The soft shell or Ipswich clam (*Mya arenaria*), for example, is found in shallow shore waters from Labrador to the Virginia-North Carolina border. In the Chesapeake Bay system it is found near its southern limit of distribution on the east coast. Studies have shown that this very important commercial species cannot survive temperatures above those that normally occur in its southern range during hot summer periods. Indeed, recent extensive mortalities of this species in the Chesapeake system appear to have been caused by extended periods of naturally-caused, high, summer water temperatures. Thus in the Chesapeake system we can expect summer mortalities of this eminently edible clam whenever there is artificial heating of its habitat above the normal surface water temperature of about 90° F.

Temperature acts as a directive force in that it influences daily and seasonal behavior patterns. Fishes are well known for their sensitiveness to temperature in influencing their time schedules for migratory movements to spawning grounds. The striped bass *(Roccus saxatilis)*, for example, is known to prefer spring temperature in the low 60s for spawning. It is therefore important that highly migratory animals such as striped bass, shad and salmon not be subjected to unusually altered temperatures that would interfere with their normal behavior patterns and consequently interfere with completion of necessary life cycle activities.

Temperature is a controlling factor in that it affects biochemical reaction rates and consequently influences metabolic rates. As water temperatures are elevated, respiration activity of aquatic animals increases. Unfortunately, dissolved gases become less soluble in water as temperatures increase. Since oxygen requirements of aquatic animals increase with elevated temperatures, there is less oxygen available in the water.

Some environmentalists have been aware for some time of the possible ecological effects of large volumes of artificially heated water on aquatic ecosystems. However, until recent years individual steam electric station installations were relatively small in size and influenced only a small segment of any receiving body of water. So little concern was expressed for these minor environmental "trade offs" with industry. But in the past decade it has become clear that we are in a developing electric age, an age that is intimately tying itself to nuclear energy, an age which promises to give us extensive environmental alterations.

Nuclear Power Adds Problems

Chiefly through the efforts of the United States government and the Atomic Energy Commission, nuclear power has quickly passed from the pilot-plant stage to a position of engineering and economic maturity. Until recently steam electric stations were all coal-fired, oil-fired, or gas-fired installations of less than 1,000 MW capacity. However, since it became clear that the U.S. government was committed to a policy of acceleration of nuclear power development, the electric utility industry has made a commitment to help meet the nation's electricity needs through the use of nuclear energy in large installations.

Nuclear power plants, unfortunately, are even less efficient than fossil fuel plants and, as a result, produce about 50 per cent more waste heat per unit of electricity than fossil

Dr. Mihursky washing a net used in zooplankton studies on an estuary subjected to heated discharges from a steam electric station.

fuel plants. In order to compete economically with fossil fuel, nuclear installations must necessarily be of large capacity.

New nuclear plants will reach 1,000-4,000 MW and, if operated on present engineering designs, each may require up to 7 billion gallons of water per day for cooling. That's more than 20,000 acre feet of water! The need for such huge amounts of water is resulting in power companies wanting to pump volumes nearly equal to the entire flow of a large river.

Oysters Turn Green

Lack of sufficient water from the usual, inland freshwater sources is forcing industry to move to the Great Lakes and to estuarine and ocean sites where large volumes of water and water surfaces are available for cooling.

Unfortunately, brackish and marine water is highly corrosive to metallic surfaces and can cause the loss of heavy metals from power plant condenser tubes to the water. Filter-feeding shellfish such as oysters can absorb certain elements 25,000-70,000 times the concentration level of these elements in the surrounding water. Copper, for example, can reach such high levels in oyster tissues that these oysters turn green and become unfit for human consumption.

Biological growths and deposits on metal walls of heat exchange surfaces, such as condenser tubes, reduce heat exchange capacity and result in loss of electric generating efficiency. In order to keep these surfaces clean of fouling material, the steam electric station industry uses a variety of cleaning agents including detergents, acids, and chlorine. Biologists are becoming increasingly concerned about the use of chlorine since, by design, it is used as biocide, and it not only kills attached organisms but also kills entrained organisms that may be free-swimming or free-floating in the water.

Entrained organisms are especially important to the integrity of estuarine and marine habitats and include a variety of species or life cycle stages such as the following: 1) phytoplankton, the microscopic plant life that is at the base of the food chain; 2) crustacean zooplankton, the herbivores or so-called "cows of the sea" which serve as food for most fish; 3) shellfish eggs and larvae such as those of clams and oysters which have stages that drift in the water for a few weeks before settling to the bottom; 4) fish eggs and larvae.

Studies on phytoplankton and zooplankton have shown destruction of up to 95 per cent upon passage through a steam electric station. If recovery rates of entrained species cannot keep up with the destruction rates, extensive depletions in these species can be expected in the open environment with consequent interference with useful biological productivity.

Thus environmentalists must now contend with possible temperature, metallurgical and biocide problems at each steam electric installation. In addition, nuclear units present still another questionable factor—radioactive materials.

Three Alternatives

Until recently, few states considered temperature change caused by industrial activity to be a pollutant. But the advent of the electric age—with the large growth in electric power demands coupled with engineering moves to add considerable amounts of waste heat to the aquatic environment—has stimulated serious thought about the ecological consequences of these environmental alterations.

The scattered reports existing on the effects of relatively small, coal-fired steam electric stations on aquatic organisms include results that have alarmed some environmentalists because of recorded drastic reduction or complete elimination of normally occurring flora and fauna in heated waters during summer months. Kills of aquatic organisms such as fish, insects, and blue crabs have occurred around steam electric stations during the critical warmer seasons.

In view of the developments cited, we now realize that society faces three alternatives: 1) to ignore the problem and run the risk of adding to our traditional exploitation and sacrifice of natural resources; 2) to produce electricity in a different manner with resultant reduced thermal loads into the aquatic environment; 3) to find ways to redirect thermal loads in a controlled manner and possibly make constructive use of waste heat.

Industry, regulatory and management agencies are now debating which direction to take. Researchers are slowly providing field and laboratory information on temperature effects upon aquatic organisms. Such data will permit useful and definitive predictive statements to be made about the effects of steam electric stations at various sites. But unfortunately the information will not be available before many major decisions are made.

A blue crab killed by thermal loading—one of an estimated 40,000 found around a steam electric station discharge area.

Governmental pressures, through the new federal law requiring states to establish new water quality criteria and standards, are resulting in new temperature regulations being established throughout the United States. Until recently most states had no regulations on thermal discharges. Maryland, one of the few states that did, now recognizes the seasonal temperature requirements of acquatic organisms and has imposed temperature restrictions during all seasons. Significantly, Maryland has reduced allowable maximum summer discharge temperatures from the old 100° F to a maximum of 90° F in tidal waters and 93° F in non-tidal waters. Most states are permitting little if any change in temperature in waters containing trout or salmon populations.

A complication still exists with decisions on nuclear installations. At the federal level the Atomic Energy Commission passes judgment on nuclear plants, specifically on radiological hazards and safeguards. It has been given no responsibilities regarding thermal wastes and is requesting the U.S. Fish and Wildlife Service and the Federal Water Pollution Control Administration to make recommendations to assist in evaluating proposed thermal discharges. New legislation is necessary to clarify the authority of the various governmental agencies.

In February (1968) Senator Muskie's Senate Subcommittee on Air and Water Pollution started holding hearings on thermal pollution problems throughout the country. Facts are being brought into the open and such subjects as environmental effects, engineering designs, cost benefits and site selection are being thoroughly discussed.

Present alternatives in engineering designs include the use of evaporation cooling towers in open cooling systems. Water is dropped down the inside of a tower and air convection passing up from the tower base reduces the water temperature. This technique is commonly used in England where relatively low air temperatures make such a system very practical. Unfortunately evaporation may cause a 10-20 per cent loss of water to the atmosphere. Thus water is removed and made unavailable for other purposes; indeed such evaporation tends to concentrate other pollutants in the water.

From the environmentalist's viewpoint a closed-circuit cooling system similar to an automobile radiator is ideal for minimizing environmental effects. Closed-circuit devices work with electric powered fans and will consequently consume a small percentage (about 3 per cent) of a steam electric station's electricity production. Industry contends that cooling devices are too expensive to operate and would prefer to avoid incorporating such design changes into their engineering plans.

Recommendations

At a recent Senate Subcommittee hearing the author recommended the following:

1) Considerably more basic research is needed on the effects of temperature and temperature change on all life-cycle stages of our important aquatic species. Temperature effects on mortality, behavior, and physiological activity are not presently available in sufficient quantity or quality to make definitive predictive statements about steam electric station effects at all proposed sites.

2) Alternative methods of cooling should be explored.

3) Alternative sources of water for cooling purposes should be evaluated..

4) Chlorine, used to clean condenser tubes of steam electric stations, acts as a biocide and its use should be prevented. Other less harmful cleaning methods should be required.

5) Since certain commercially important shellfish can concentrate heavy metals in their body tissues and be rendered unfit for human consumption, adequate safeguards should be required to prevent metallurgical problems and the consequent release of heavy metals to aquatic systems.

6) If large volumes of cooling water are to be used, site selection is a critical operation and environmental cost-benefits should be taken into account.

7) Power utilities should not be permitted to operate independently in site selection; permits for land acquisition, construction, and water use should not be given until a responsible State or Federal agency has approved the site and operational procedures as optimal to the public welfare.

8) Power utilities should bear the cost of investigational work necessary for site and environmental evaluations.

9) Ecological evaluations should be carried out only by responsible individuals or agencies approved by the controlling State or Federal agency.

10) The regional development of steam electric stations should not conflict with large-scale regional socio-economic planning.

11) Possible constructive uses of waste heat should be thoroughly explored, with a pilot-plant operation as a first step.

It is apparent that there is a growing awareness of the environmental consequences of man's progress. We are developing a better attitude toward our habitat and many now realize that we need a quality environment to have a quality society. Unfortunately, the march of civilization—with its present great growth in population, heavy demands for material items and services, increase in technological capacity and concurrent increase in waste materials—threatens to inundate us before effective controls are developed.

We are experiencing more far-reaching radical environmental alterations as a result of man's activities during this century than has occurred in the entire human history. Our primary responsibility, as the most dynamic species endowed with the ability to reason that has yet evolved on this "organism", Earth, is quite clear. We must determine whether the rapid growth and change characteristics are creating a stress environment that exceeds quality living limits. If they are, we must learn to cope with them right now or it will be a sorry legacy that we pass on to future generations.

This paper reflects collective knowledge and judgment of the persons listed below, whose professions are in aquatic sciences, geology, resource management, and engineering. It results from their conviction that such professionals should contribute to public decisions on the management of natural resources. Although the authors are Cornell staff members, the document is not to be construed as representing an official position of Cornell University *

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"our mutual alma-mater"

Ithaca, New York
May 27, 1968

Thermal Pollution of Cayuga Lake by a Proposed Power Plant

The New York State Electric and Gas Corporation has announced its intention to construct an 830-megawatt, nuclear-fueled, electric generating plant at Lake Ridge, Town of Lansing, on the east shore of Cayuga Lake, about 16 miles north of Ithaca and adjacent to its present coal-fueled Milliken Station. Operation of this plant, as now planned, involves the use of substantial quantities of lake water for cooling purposes.

Water resources such as Cayuga Lake provide aesthetic and recreational values which increasing numbers of our population find indispensable and irreplaceable. At the same time agricultural, domestic, and industrial needs for water are accelerating. As a result, we are now faced with conflicts in water demands that are unprecedented in complexity and intensity. Only the most careful comprehensive planning can resolve these conflicts. This requires full use of all relevant knowledge, and the willingness of all interest groups to share in the compromises.

This paper describes the present status of Cayuga Lake, certain effects that the proposed power plant will have on the thermal and nutrient structure of the lake, and likely impacts of these changes on the aquatic environment. Attention is then directed to design modifications already in use at other such plants that could be applied to this installation to eliminate thermal pollution.

Cayuga Lake Now

Cayuga and several similar Finger Lakes are very unusual among lakes of the United States. Cayuga is 38 miles long, has a mean width of 1.7 miles, and a surface area of about 66 square miles. It has a maximum depth of 435 feet, a mean depth of 179 feet, and a volume of 331 billion cubic feet. The mean flushing time (average length of time required for a drop of water to move all the way through the lake) is 9 years.

During summer months the lake is thermally stratified: the upper layer (epilimnion) and lower layer (hypolimnion) differ so much in temperature—and hence in density—that they do not mix, even under the influence of strong winds. During the period of stratification (May to November) temperatures in the epilimnion range from 50 to 73°F, those in the hypolimnion from 40 to 43°. The epilimnion layer becomes thicker as summer progresses, usually extending to depths of 35 to 50 feet below the surface. In autumn this layer begins to cool and to increase in density. This process continues until late October or November, when density of the water in the

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epilimnion has increased to a point where it is near enough that of the hypolimnion so that the next strong wind causes the two layers to mix. The lake then becomes essentially the same temperature throughout and remains so until May, when warming (and density reduction) of the surface layer reaches a point where summer stratification is again in force. Additional information on these and related phenomena are available in Henson, Bradshaw, and Chandler (1961).

During the period of summer stratification, biological production, particularly of single-celled algae, is confined to the upper layer of water where light is available in combination with nutrients and warmer temperatures. Dead plant cells and planktonic animals sink to the hypolimnion. While stratification persists, there is no source of additional oxygen for the hypolimnion. Animals confined to the hypolimnion—including lake trout—use the oxygen there in respiration, and additional oxygen is consumed by bacterial decay of the dead plant and animal matter continually sifting down from above. Thus, oxygen in the hypolimnion decreases throughout the summer until that time in the fall when the epilimnion cools to a point where winds can mix the entire lake again, and rejuvenate oxygen supplies in the deeper water.

Most lakes gradually become more fertile with the passage of time by a process known as eutrophication. As biological production continues, organic matter accumulates, while more nutrients, including nitrogen and phosphorus in various forms, are continually being added from the surrouding watershed. As fertility increases, so does biological production. Also, as a lake becomes greener from the proliferation of single-celled algae it absorbs more solar radiation and reflects less. This creates higher temperatures that speed up biological production. Thus the process of enrichment tends to be self-accelerating.

Greater use of the watershed for housing, industry, and agriculture increases the influx of nutrients and speeds eutrophication. Although lakes vary in their rates of aging depending on nutrient load, temperature, area, and depth, the basic process is as inevitable as the aging of man. This process is documented in a vast body of literature. Edmondson, Anderson and Peterson (1956), Hasler (1947), and Sawyer (1947) provide good examples. Lake Erie is one of the most recent and extreme examples of acceleration of natural eutrophication with all its attendant problems. It is important to bear in mind that effects of eutrophication are usually irreversible.

Although in the past Cayuga has been considered a relatively infertile lake, recent studies have shown that eutrophication is proceeding faster here than had previously been suspected (Hamilton and Barlow, 1966). Water transparency is a useful index of the amount of single-celled algae and other plankton organisms in a body of water such as this one. Comparable averages of three series of transparency measurements taken in Cayuga Lake in three widely separated periods were as follows:

Year	*Mean Transparency, Feet*	*Number of Observations*
1928	17.3	13
1950-52	13.0	36
1965	7.9	9

Power Needs and the Proposed Plant

Recent analyses by Picton (1960) and Trembley (1965) indicate that electrical needs in the United States are doubling every 6 to 10 years. These needs will be met largely by construction of steam electric stations. Simply stated, such plants operate by turning water into steam to spin a turbine which drives an electric generator. After passing through the turbine, the steam is condensed by cooling into water, then reconverted to steam for the turbine, and so on. Installations such as the present New York State Electric and Gas Milliken Station burn coal or other fossil fuel to produce the needed steam. An increasing fraction of the newer plants, such as the one now proposed for Cayuga Lake, use some type of nuclear reactor as a source of heat to produce the steam. As of March 1968, electric utilities had 15 nuclear plants operating, 23 under construction, and 84 planned (U.S. Atomic Energy Commission, 1968).

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A salient characteristic of these nuclear-fueled plants is that they require more cooling water per megawatt output than a conventional fossil-fueled plant. By 1980, annual cooling-water needs of the entire electric industry are expected to equal one-sixth to one-fifth of the United States' total yearly supply of runoff water.

The following information on the Bell Station nuclear plant proposed for Cayuga Lake was provided by New York State Electric and Gas officials in a meeting at Cornell University on February 3, 1968, and in a Fact Sheet dated February 21, 1968: Site clearance is scheduled for April 1968 and operation for mid-1973. The plant would have an operating capability of 830,000 kilowatts. Water for cooling would be withdrawn from the hypolimnion at a depth of approximately 100 feet. Heat from the plant would add approximately 6 billion B.T.U. per hour to the water.[1] This would raise its temperature from an average of about 45°F where it leaves the upper hypolimnion, to 65-70°F when it is discharged from the plant into the surface layer of the lake. Water would pass from the lake, through the plant, and back into the lake at a continuous rate of approximately 1,200 cubic feet (9,000 gallons) per second. These data agree well with performance statistics given in the literature for other nuclear-powered steam electric stations of similar design and capacity (Cootner and Lof, 1965).

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[1] Heat output from the present Milliken Station plant is reportedly about 1.3 billion B.T.U. per hour.

With the above facts on Cayuga Lake and the proposed power plant, we now discuss adverse effects of the plant on the lake that can be predicted in advance with complete certainty, and others that are either probable or distinctly realistic possibilities in this situation. It is difficult to conceive of any appreciable benefits to the lake's present ecology from thermal pollution.

Known and Possible Effects of the Proposed Plant

The total volume of water withdrawn from the hypolimnion during a 6-month period of summer stratification would be 18.5 billion cubic feet, or roughly 10 per cent of its average volume during the May-October period.

Every 24 hours, year-round, 100 million cubic feet of heated water (65-70°F) would be added to the epilimnion. Spread uniformly over the entire lake, this would be an addition of about one-half inch per day to its 66-square-mile surface. It would increase the epilimnion's normal October volume by some 20 per cent.

The volume of the epilimnion will be increased substantially by the large, continuous addition of heated water throughout the stratification period. This will delay cooling—and mixing—of the lake in the fall. Also, the continued addition of heated water throughout the winter will cause "summer" stratification to begin earlier. The amount by which cooling will be retarded and warming advanced requires complex calculations, now in progress.

Because stratification will start sooner and last longer, the lake's growing season will be extended at both ends, with a higher rate of biological production. Productivity in the epilimnion will be augmented by continuous addition of warmed water from the hypolimnion with its available nutrients, as described earlier. The proposed plant will thus increase productivity in the upper layers of Cayuga Lake, but no one can predict the exact amount by which the production rate will be increased.

Prolonging the period of stratification also will extend the period of oxygen depletion in the hypolimnion. A higher rate of biological production in the epilimnion will increase the settling-out of organic matter into the hypolimnion, where decomposition of this added material will increase the rate of oxygen consumption. This decomposition and the reduction in volume of the hypolimnion throughout the summer (caused by the power plant's pumping) will, independently, reduce total oxygen available for animal life in the hypolimnion.

Maintenance of steam-electric power plants such as the one proposed for Cayuga requires periodic flushing treatments with such compounds as chlorine (for controlling growths in the pipes), hydrochloric acid, detergents, and corrosion inhibitors. All of these would have undesirable effects on the lake, but again, the magnitude cannot be predicted now.

Augmentation of the natural eutrophication process in a lake may produce various adverse effects; these are well documented for many waters such as the Madison (Wisconsin) Lakes and Lakes Oneida, Washington and Erie. One of the most common results is the proliferation of single-celled algae. When this reaches a point where the water has a diluted 'pea-soup' appearance it is not only unsightly and unpleasant, but water with such reduced visibility is unsafe for swimming and water-skiing. Such conditions may also be accompanied by changes which favor the development of blue-green algae, many of which produce foul odors, tastes, and substances which may be toxic to fish, birds or mammals. When productivity increases are large enough, one of the most devastating effects may be an increased rate of depletion of summer oxygen reserves in the hypolimnion, resulting in destruction of trout habitat.

Other natural consequences of increased productivity are marked increases in the development of filamentous algae and rooted aquatic weed growths, processes already under way in Cayuga as its fertility increases. Filamentous algae are common along the east side of the lake, particularly in the area of Milliken Station.

Small aquatic crustaceans living in the hypolimnion are the basic food source for the young of fish species such as lake trout in Cayuga. It is not likely that these forage organisms could survive the extremely rapid temperature rise in the cooling system, once they are pulled into the plant's 1,200 cubic-feet-per-second water intake. The volume of water involved over a period of time suggests that this effect on the fish food supply could be considerable. Mihursky and Kennedy (1967a) found that none of seven small estuarine crustaceans could withstand rapid temperature rises of 15 F degrees. And organisms in estuarine environments are typically adapted to more rapid temperature changes than are those in a lake such as Cayuga.

In cooler months of the year, the current of warmer water entering the lake from the plant would tend to attract and concentrate fish in this area—a common behavior pattern (Dryer and Benson, 1956)—where daily (or more frequent) flushings of chlorine might kill fish or other organisms. In addition, more subtle influences on behavior, reproduction, and survival could be involved (Mihursky and Kennedy, 1967b; Raney and Menzel, 1967).

Small amounts of radioactive materials will be released routinely into the lake with water discharged from the plant. Many studies have shown the

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ability of aquatic organisms to accumulate certain radionuclides (Polikarpov, 1966), but current knowledge restrains prediction of exact mechanisms of transfer, concentration, and effects of radionuclide accumulation on most organisms in freshwater food chains.

Alternatives

The Bell Station, as presently proposed and as described above, would employ a continuous flow-through cooling system. Such a system returns heated water from the plant directly to the lake. It is important to understand that several design modifications can be, have been, and are being increasingly used in such plants to reduce or eliminate thermal pollution of aquatic environments (examples are pictured and described in Stroud, 1968; Stroud and Douglas, 1968). Some of the alternatives are described here in a very general way.

One alternative is to locate such a plant with a continuous flow-through cooling system on a shallow impoundment constructed specifically for the purpose. For a plant of the proposed size, a 1200-acre reservoir might be required.

Another method consists of trickling the heated water over a series of baffles arranged in towers to cool the water by evaporation before returning it. This method has the disadvantages of producing fogging and/or icing within one to several miles of the plant in cold weather, concentrating minerals in the water returned to a lake or stream, and losing considerable amounts of water by evaporation. The towers may be large and conspicuous.

A method far more satisfactory to lake ecology than the preceding involves evaporative towers with a closed-circulation cooling system. Heated water from the condensers passes through evaporative cooling towers, with large electric fans to increase the cooling rate. The cooled water is then returned to the condensers, and the process is repeated. Cooling tower water losses could be made up by additions from the lake. This system need involve no appreciable thermal pollution of the aquatic environment, since it can be operated as a self-contained recirculating unit not connected on a flow-through basis with the lake or stream. The system has most of the disadvantages listed above for evaporative towers, plus fan noise and, reportedly, increased costs. For economy, power companies try to operate the closed system only in the warmer months, using a flow-through system when weather conditions permit.

The following item, quoted in its entirety from ***Environmental Science and Technology*** (March, 1968, Vol. 2, No. 3, p. 165), indicates the feasibility of this sort of design:

"Nuclear Industry Plans to Control its Thermal Pollution

The Vermont Yankee Nuclear Power Corp. (Vernon, Vt.) has agreed to construct cooling towers—at a cost of $6.5 million— to control its thermal output to the Connecticut River, according to its president, Mr. Albert A. Cree, at recent hearings (Montpelier) of the Senate Public Works Subcommittee of Air and Water Pollution. By using giant, fan-forced air radiators in a closed circuit cooling system, Vermont Yankee will discharge effluent water so that no increase in the temperature of the river occurs during the summer months and no more than a 4°F. increase occurs during the winter months. Without this new equipment, the medium sized (540-megawatt) nuclear steam electric station, for which foundation construction has already started, would use two thirds of the total flow of the Connecticut River and discharge effluent water having a temperature more than 20°F. higher than the intake water. Operation and maintenance of these towers will cost $900,000 annually, resulting in an estimated increase of one quarter cent per kilowatt hour, approximating a 1% increase in the cost of electricity, according to Vermont Yankee."

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Plans for Preliminary Study and Design Modification

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The existing plant and thermal pollution at Milliken can be studied to permit projections of certain effects of the proposed nuclear plant that are not already predictable. A minimal study of these factors would require at least 12-24 months. The New York Electric and Gas Corporation has proposed to undertake studies, and has indicated a willingness to modify the design of the plant if, in its opinion, results indicate the need to do so.

Permit Granting

The United States Atomic Energy Commission grants the permit for construction of a plant such as the one proposed here and, later, an operating permit. The Atomic Energy Commission has stated that its decisions will not take into account actual or possible thermal effects on water bodies. In New York State these effects are considered by the Department of Health which, after consultation with the Conservation Department, may issue a permit.

We hope that the State Department of Health will consider critically the ecological effects that the proposed power plant will have on Cayuga Lake. The State Conservation Department has been involved in preliminary conferences with New York State Electric and Gas Corporation, but in the absence of a formal application from the Corporation, it has not yet taken a stand on the proposed plant. If these agencies fail to exercise their full responsibility, a permit to operate Bell Station on Cayuga Lake with an open-circuit flow-through cooling system will be granted without regard for the effects of thermal pollution.

Conclusions

There is no question about the urgency of need for more electric power in the United States. New York State Electric and Gas Corporation's desire to locate a second steam-electric station on Cayuga Lake is understandable. Deep lakes such as Cayuga are rare water resources characterized by large volumes of exceptionally cold water in the hypolimnion, year-round. The greater operating efficiency accruing to the company from using this water for cooling would more than compensate for the cost of transporting the electricity to the areas of use. The present Milliken Station is considered one of the most efficient steam electric plants in the entire country, due largely to its use of this unique cold-water supply for cooling.

The proposed Bell Station will heat and flush large volumes of water, with its nutrients, into the epilimnion, thus prolonging the growing season and presumably increasing the biological production rate, which is already higher than previously supposed. The exact amount by which biological production rate will be increased is not predictable, but this is not the central issue. Deterioration of Cayuga Lake is no more acceptable if none of us responsible for decisions to hasten its deterioration are alive when it happens. We have an obligation to pass this resource on to posterity as clean and unpolluted as possible. As yet there are no known practical means of withholding all nutrients entering Cayuga from sewage or from agricultural run-off, but thermal pollution is controllable.

Year-round operation of the Bell Station with a closed-circuit cooling system would eliminate this added thermal pollution of the lake. Our society has often indicated its ability and willingness to pay for maintaining environmental quality, therefore a negligible power cost increase to meet the higher construction and operation expenses of closed-circuit cooling should be acceptable. The momentum of public opinion increasingly obliges those individuals or firms who are polluting our air, water, and land to include as part of their operating cost satisfactory solutions to their waste disposal problems. This should be the case with thermal pollution of Cayuga Lake at Bell Station.

In summary, the proposed plant threatens a great many of Cayuga Lake's primary values. We believe no utility company or other single-interest group has any right to impose such a threat to a resource so valuable to so many.

A final decision on the power plant must take into consideration all effects of the project. It is incumbent upon the New York State Electric and Gas Corporation to prove that operations of the proposed plant will not produce changes such as (but not restricted to) those mentioned in this paper which pose a distinct threat to our environment.

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United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 90th CONGRESS, SECOND SESSION

Vol. 114 WASHINGTON, WEDNESDAY, APRIL 17, 1968 *No. 63*

Senate

THE ELECTRIC POWER PLANT SITING ACT OF 1968

Mr. KENNEDY of Massachusetts. Mr. President, 50 years ago, sites for the location of hydroelectric plants were considered so valuable and scarce a national asset that the Congress passed legislation reserving these sites for later use as powerplants.

Today, we face a similar problem with sites for large thermal and nuclear electric-generating plants.

There are two basic reasons. First, our technological abilities have advanced so dramatically that very large-scale plant construction is now feasible whereas it has not been in the past. And, in general, larger plants produce electricity at less cost than smaller plants. Second, the larger plants require considerably more land than the smaller ones, and this land is fast becoming impossible to find in large enough parcels.

Yet the use of electric power is growing dramatically. In this year alone, generating capacity will rise nearly 8.5 percent over last year's figure. At this rate, our generating capacity will double before 1980.

There will almost certainly be very serious difficulties in finding suitable sites for the new generating plants this increase in demand for power will require. Near our large metropolitan areas, there simply are not the large unrestricted land areas, adjacent to large bodies of water, which large generating plants need for cooling purposes.

Because this confrontation between the need for land and its scarcity can assume serious proportions, and can have serious effects upon our natural resources, I am today introducing a bill to direct the Federal Power Commission to survey possible sites and to publish a plan of their location.

The problem of generating plant sites is particularly acute because of the special needs of nuclear plants. Nuclear plants, for example, discharge water used for cooling at temperatures 11 to 23 degrees hotter than on intake. By 1980, the power industry will be using about 20 percent of all the fresh water runoff in the United States for cooling. This has a potentially disastrous impact on all forms of aquatic life—fish and birds—as well as on agricultural irrigation.

On February 7, 1968, in a speech presented to the Governors Industrial Safety Conference meeting in San Francisco, Dr. Glenn T. Seaborg, Chairman of the Atomic Energy Commission, reported:

> Perhaps the most significant attribute of the peaceful atom is its ability to generate electricity. Within just the last two years, the growth of nuclear-electric power has risen remarkably. In 1966 and 1967 more than one-half of the announced new steam generating capacity in the United States was nuclear-powered. We now have in operation, under construction and planned, a total of more than 85 nuclear power plants with a combined capacity of more than 60,000,000 kilowatts. While our present nuclear generating capacity is 2,800,000 kilowatts, our projections indicate that by 1980 this total will rise to 150,000,000 kilowatts and by the year 2000 to more than 700,000,000 kilowatts.

The recent record of AEC predictions regarding the growth of nuclear power is one of understatement. In 1962, in a special report of the President on the status of civilian nuclear power, the Commission predicted nuclear generating capacity in the United States of 5,000,000 kilowatts by 1970, and 40,000,000 kilowatts by 1980. In 1964, with improved prospects for nuclear power, the AEC predicted that by 1970 there would be 6,000,000 to 7,000,000 kilowatts of nuclear generating capacity in the United States. It was also considered likely that there would be between 60,000,000 and 90,000,000 kilowatts by 1980—an upward revision of more than 50 percent in 2 years. In a report to the President of February 1967, the Commission reported:

> In view of the unexpected surge in 1965 of orders for nuclear power plants, the Commission further revised its projections of nuclear power, and, in the spring of 1966, made a substantially higher new projection of over 10,000,000 kw generating capacity by 1970–71 and of 80,000,000 kw to 11,000,000 (mean 95,000,000) kw by 1980. Subsequently, utility commitments for nuclear power plants have been made at an even faster rate than in 1965. Updated Commission forecasts of nuclear capacity up to 1980 and beyond are being developed.

Industry spokesmen have suggested that nuclear power will develop at a rate faster than anticipated by AEC. For instance, Sherman R. Knapp, chairman and chief executive officer of Northeast Utilities, a holding company serving New England, recently said that—

> The mix of nuclear power with pumped-storage plants can lead to a rebirth of New England as a major industrial region. I doubt that there will ever again be any fossil-fueled plants built in New England. There may be some conventional units put in as replacements or additions to existing plants, but no complete plants.

A key to the economic success of nuclear plants is their size. As the AEC noted last year:

> At the end of 1966 there were 21 steam-electric generating units of 780,000 to 1,130,000 kw under construction or committed. Twelve or about 60 percent, of these are nuclear fueled. Prior to 1966, nuclear electric plants in service ranged up to 270,000 kw, whereas the nuclear plants presently scheduled to enter service beyond 1966 range up to 1,065,000 kw. It is expected that the trend towards large sized units of generating capacity will continue.

Based on expert estimates, it appears that at a minimum the electric utility industry will construct the equivalent of 700 nuclear power units of 1,000,000 each over the next three decades. The location and operation of these facilities, as I have pointed out, pose significant siting problems.

Because the economics of nuclear powerplants dictate large units, atomic stations can be constructed by only those relatively few major utilities with access to the large amounts of capital financing necessary. Where a single system constructs a plant, the tendency is to locate it within the system's service area. But with joint ventures, the combined service area—larger than that of a single system—becomes the limiting factor on plant location. In either case, these parameters may prevent siting of a station in the most logical location because of important safety and environmental considerations.

These considerations may also discourage expanded joint action and multiple-unit stations which may offer substantial savings.

Direct participation in nuclear powerplants by all utilities in a region is desirable for other reasons as well. It discourages concentration of control over generation and transmission, and it cuts down on the number of smaller fossil-fuel burning facilities used to produce power. The motivation for curtailing air pollution is as strong for the small system as for the large, but the means of carrying out this solution in the former case may be totally dependent on joint action with one or more other utilities—due to economies of scale—while a large system may be in a position to implement the "atomic answer" without aid from other systems.

Because of the peculiarities of nuclear power, there are a finite number of locations in which atomic stations can be placed. Siting considerations are considerably more restrictive than those currently associated with fossil-fueled plants. Some of the physical factors limiting location of nuclear facilities are:

First. Health and safety considerations. Problems of geology, seismology, hydrology, and meteorology may literally preclude the possibility of construction at certain specified spots, while population density, health, and safety considerations may preclude construction at others. In fact, it is conceivable that some utility systems in the United States are effectively prohibited from building nuclear powerplants at any location within their service area.

Second. Demand for land. In a survey completed for the Bonneville Power Administration, Battelle-Northwest estimates the minimum size of the land area required for the construction of a 1,000,000-kilowatt nuclear generative plant located adjacent to a large body of water at 350 acres. A 1,500,000-kilowatt station would need 600 acres, and a 2,000,000-kilowatt station, 900 acres. In certain areas of the country, appropriate land is simply not available for this purpose.

Third. Cooling water is a commodity which well may ultimately be in short supply. A. C. Monteith, senior vice president of Westinghouse, commented on larger generating plants before the World Power Conference in Tokyo in 1966. He said that by the year 2000, some 200 new plant sites will be developed in the United States, and suggested that some of these will be 10,000,000 kilowatts or larger in size. He pointed out that only five rivers in the United States will have sufficient water flow to support the cooling water requirements for a 10,000,000-kilowatt plant. If cooling towers or manmade lakes prove impractical to supply the water requirements for these huge plants, it is possible that most nuclear installations will have to be located near oceans and along the Great Lakes, with extra-high-voltage lines being used to move the power inland.

Fourth. There is a growing criticism of the thermal pollution propensities of generating stations—fossil-fueled or nuclear—from officials responsible for water quality control. Without doubt, certain bodies of water may be proscribed as locations for nuclear plants on the basis of potential discharges of hot water.

Fifth. Public reaction to nuclear power plants is a factor in location in two respects: There remains concern about the placement of a reactor in populated areas, and there is rising public agitation about the aesthetics of all utility equipment.

Sixth. Limited transportability of pressure vessels, because of their size and great weight, has restricted reactors of larger sizes to sites accessible by—or only short distances from—navigable waterways. Field fabrication may in the future provide an economic solution to this problem.

Future concern over the safety of operation of nuclear power plants may dictate that atomic stations be placed underground or constructed on manmade islands off the coast.

The AEC pointed out recently that the annual volume production of high-level liquid radioactive waste is expected to increase by a factor of 100 or more between 1970 and the year 2000, due principally to the growth in nuclear power. The time span over which these wastes must be contained and isolated is on the order of 500 to 1,000 years. Disposal of irradiated reactor materials may require the creation of atomic "cemeteries" located near reactor farms, and a system of perpetual protection for the public.

Shortages of water suggest the ultimate desirability of combination desalting and powerplants fueled by fission. The AEC has suggested that such combination plants can lead to "agri-industrial" complexes which not only produce water and power, but fertilizers, aluminum, and magnesium. The enormous size of the installations needed to secure economic supplies of water, and the large amounts of power which would be produced in the process, dictate massive dual-purpose facilities located near major sources of salt or brackish water.

Increasing concern on the part of the public regarding aesthetic aspects of utility equipment encourage careful consideration of the siting of nuclear powerplants. For instance, the Sports Fishing Institute has pointed out that power stations are invading the estuaries at an accelerated rate. This is evidenced by the fact that 22 percent were located there in 1950, whereas some 32 percent are anticipated to be adjacent to estuaries by 1980. Other land, water, and trees are also affected. Rivers and lakes are potential nuclear power sites, and replace or ruin bathing beaches and boat landings. Major transmission lines from large generating stations can cut wide swaths through forests.

Sharing of capacity can cut costs and land use. The FPC reports that a 500-kilovolt line costs one and two-thirds the investment of a 230-kilovolt line but has six times the relative load capacity and requires only 40 percent more land.

> If six 230-kilovolt circuits were constructed separately—

Chairman Lee White told the Senate Commerce Committee in 1966—

> they would require rights-of-way totaling 750 feet in width, and the waste of land in that case would be almost 70 acres for every mile of line.

The clear national interest in those matters is illustrated by the fact that the Federal Government has spent in excess of $2 billion on the development of commercial nuclear power, and is asked to supply resources of land and water to make feasible particular atomic stations.

For example, utilities in Iowa are investigating the possibility of using Federal reservoirs for cooling water for an atomic plant, and in New Jersey companies hope to acquire Federal lands for siting two 1,000,000-kilowatt-plus nuclear units.

Future siting and size of nuclear power installations must take into account these long-range factors.

Major attention has been focused on "thermal pollution" problems associated with nuclear power plants for nuclear generation requires as much as 40 percent more cooling water than conventional fossil fuel generation. Currently, hearings are underway in the Senate to determine the scope, nature, and seriousness of this thermal pollution problem.

Present predictions indicate nuclear power plants will provide an increasing share of the projected expansion of the demand for electricity and, because of their size, safety requirements, and relative heat inefficiency, the nuclear plants will contribute large quantities of waste heat to the Nation's rivers, lakes, estuaries, and coastal waters.

One witness at the hearings, Mr. Tor Kolflat, a partner in the engineering firm of Sargent & Lundy, summarized the situation regarding the use of water powerplants as follows:

> Its major use is for cooling. Estimated total heat rejection from all types of thermal generating capacity will increase 9 fold by the year 2000. Source of this heat is the turbine exhaust and the magnitude is influenced by the steam cycle design. The condenser transfers the turbine exhaust heat to cooling water and then the atmosphere. For the same heat rejection different temperatures result depending on the amount of cooling water conveying the heat. Heat transfer to the atmosphere from a water surface is greatest in summer months and markedly increased all seasons with higher water temperatures. In a large body of water the hot water spreads itself over the surface and does not affect the deeper water. Rivers may be re-used over and over for cooling since the heat dissipates to the atmosphere as the water flows downstream. Establishment of water temperature limits may markedly reduce the number of available river sites, and necessitate installation of supplemental or alternative cooling methods such as reservoirs or cooling towers. Although there may be certain preliminary standards with regard to water temperature, there is a need to consider each situation on the basis of further study as to stream ecology and physical characteristics such as peak temperatures, stream flow, maximum generation, and the most essential use.

Dr. J. A. Mithursky, chairman of the department of environmental research, Natural Resources Institute, University of Maryland, recommended study of alternative methods of cooling, and also asserted that—

> If large volumes of cooling water are to be used, site selection is a critical operation and should consider environmental cost-benefits as well as engineering ones. The power utilities should not be permitted to operate independently in site selection and permits for land acquisition, construction and water use should not be given until a responsible state or federal agency has approved the site and operational procedures as optimal to the public welfare. Power utilities should bear the cost of investigational work necessary for site and environmental evaluations. Ecological evaluations must be carried out by responsible individuals or agencies approved by the controlling state or federal agency. Steam electric station regional development should balance with large scale regional socio-economic planning and not conflict with it.

In an address in May, 1967, FPC Commissioner Charles R. Ross told members of the American Public Power Association meeting in Denver that—

> We must continue to explore and meet the limiting factors on large scale generation.

He declared:

> One of these factors is the scarcity of good sites for large-scale power generation whether thermal or, even more difficult, nuclear. The tremendous amounts of water needed to adequately cool the large nuclear units effectively restrict their location because of thermal pollution. In the earlier portion of this century hydro sites were considered so valuable that we instituted a policy of withdrawing the lands where such sites were located. In my opinion, the scarcity of sites for nuclear plants of the scale on the drawing boards requires an immediate national inventory of them. If long-range considerations require, such sites should be acquired or withdrawn as soon as possible. At the same time, it may be appropriate to coordinate future EHV rights-of-way from the plant sites to population centers and if necessary, to reserve such rights-of-way as well.

In October 1967, Commissioner Ross told the Federal Bar Association Committee on Federal Utility and Power Law in Washington, D.C.:

> Just as single-directed attempts to save a certain species of animal can lead to unexpected results, a single-directed pursuit of some industrial goal can do likewise. we may be witnessing the genesis of this type of situation in the rapid building of nuclear plants by the electric industry. Although few plants are in actual service, the industry is obviously putting the bulk of the new generation in nuclear plants primarily because of the promise of attractive economic costs. Yet, there are others who are wondering aloud whether enough attention by the industry has focused on the side-effects of nuclear plants. The Los Angeles Chapter of the Federation of American Scientists recently called for a moratorium of at least one year on nuclear construction on the West Coast to allow time for statewide selection of sites and a thorough evaluation of the effects of marine ecology of radiation and heated discharge water from shoreline powerplants. The Chapter particularly criticized the method of selective sites one at a time. That this group is not alone in its thoughts is illustrated by the problem faced by the group of utilities constructing an atomic plant on the Connecticut River. Actual construction has been delayed while various state and federal authorities have been attempting to determine the effects of the plant's operation on the atmosphere and the water temperature. By asking these questions now, all parties are hoping to avoid the unfavorable experiences of earlier periods of power development which have left us the beneficiaries of too many smokestacks belching pollutants and streams devoid of fish and recreational development.

I think Commissioner Ross has put it very well. We must plan now to avoid making irremediable mistakes, and the planning must be done by the FPC—the agency most experienced and knowledgeable in power matters. Only if we have fully faced all the potential problems, and found solutions to them, can we be sure we are the masters of our own future.

HUDSON RIVER FISHERMEN'S ASSN., INC.
DEDICATED TO THE RESTORATION AND PRESERVATION OF THE NATURAL RESOURCES OF THE HUDSON RIVER

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

Atom power plant in hot water

Florida Power & Light's Biscayne Bay facility is under fire
from conservationists for threat of thermal pollution.
Outcome could affect nuclear plants all around the country

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Sounding the nation's troubled waters

Senator Edmund Muskie

The subject of thermal pollution—and the probable need for quick legislative action—has caught the eye of Senator Edmund S. Muskie (D-Me.).

Last fall, Muskie asked Atomic Energy Commission authorities for their position on regulating thermal discharge from nuclear power plants and learned that AEC claims no authority on the matter—either under its licensing regulations or under an executive order that calls on all government agencies to provide leadership in cutting water pollution.

So Muskie's Public Works subcommittee on air and water pollution has been holding hearings—so far in the states of Maine, Florida, and Vermont, and in Washington, D.C.—and has discovered:

- Little real effort has been made to control waste heat discharge from nuclear plants.
- There is almost no specific information available to determine the ecological effects of large-volume hot water discharge from a nuclear facility.

What Muskie proposes to do is not yet clear. First he wants to hold more hearings (probably in the Midwest and in the Pacific Northwest) and compile more data.

He has encountered little argument about the size of the potential thermal pollution problem, however. By 1980, statisticians agree, roughly one-sixth of total water run-off in the U.S. will be needed for industrial cooling and condensing purposes. And most of this will be linked directly to nuclear power production. Just one power plant due to be built on the Connecticut River reportedly will need up to half that river's flow for cooling purposes.

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HUDSON RIVER FISHERMEN'S ASSOCIATION
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However, at the moment the alternatives all appear much too costly. For example, cooling towers could be used to reduce water temperature before it is returned to the bay. Or, a conduit could be run out 12 mi. to sea so that the heated water would be discharged into the ocean.

Cooling towers, however, would add $20-million to $30-million to the project, as a rough guess, and a pipeline to the Atlantic many millions more. Smith reiterates: "We'll do everything within reason. I'm a conservationist, but not a fanatic."

Admittedly, there's a certain amount of self-interest in Smith's search for a solution. He knows that because of the bay's shallowness and lack of circulation his plant could run into a recirculation problem because of its own effluent. In other words, under the present plan, some of the heated water might be recirculated back into the condensers, possibly causing a shutdown.

"We know this is a possibility," he says. "That's one reason we're so anxious to work out some kind of solution. But we've got to decide before long."

In the middle. When and if the problem is solved, another obstacle looms. Unless federal legislation is passed, the final word on whether FPL's nuclear plant goes into operation will not rest with AEC but with the Metropolitan Commission, following a recommendation by its pollution control officer, Paul W. Leach. And Leach is by no means happy with the prospect.

"If I am asked to offer an opinion as to whether a permit should be granted on the possibility of thermal pollution alone, I'd have to rule against the company," he explains. "But if I am asked to rule based on the total environment, the economy of the community, and the need for the plant, I'd have to say 'yes.'"

It's a decision that—rendered either way—is sure to cause a violent brouhaha. More important: It could serve as the rallying cry for fights over thermal pollution all over the U.S.

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A-Plant Land Grab May Explode

Montrose Pt. Residents, Civic Groups Battle to Block Two Nuclear Plants

By JESSE BRODEY

A 125-acre area on Montrose Point, adjoining Westchester County's newly developed George's Island Park, is being acquired piecemeal by Con Edison for the site of two nuclear power plants.

Construction of two additional atom plants will put a total of five in a two-mile area, the greatest concentration of such atomic plants in a single spot in the world.

Conservation groups, The Hudson River Fishermen's Association, the 700-member Catholic Kolping Society and Montrose Point residents aren't happy about it.

No official announcement has yet been made about selection of Montrose by Con Edison. Spokesmen for the utility continue to insist that no decision has been made on whether nuclear plants Nos. 4 and 5 will be located at Montrose, Bowline Point, north of Haverstraw across the Hudson, or at Fort Slocum in New Rochelle.

But Montrose property owners, including the Kolping Society, Fred Hauck and Florence Ellinghaus, already know the plant is coming.

Although applications for permission to build have not been filed yet by Con Edison with the Atomic Energy Commission, Con Edison has already purchased the Montrose Marina and the James Haight farm nearby. Local property owners also claim they have been threatened with condemnation proceedings if they do not sell at Con Edison's price.

The Kolping Society owns 80 acres, including 3,000 feet of Hudson River shoreline, comprising the estate which once belonged to Frederick W. Seward, the son of Lincoln's Secretary of State, William Henry Seward. His purchase of Alaska for $7 million went down in history as "Seward's Folly."

Con Edison is expected to spend $210 million, or 30 times the purchase price of Alaska, on its nuclear plant No. 4 at Montrose.

Kolping Society members were incensed when a utility survey team came ashore July 1 without permission to take test borings. Con Edison officials, when called, said it was all a mistake, apologized and said they would order the engineers to restrict boring tests to a line 20 feet off shore.

Richard Garrett, president of the Hudson River Fishermen's Association, asserted that his group is opposed to any further concentration of nuclear power plants on the Hudson. He said the association wants Con Edison to find a way to halt the discharge into the Hudson of heated water damaging to fish life, and to prevent destruction of young fish and eggs now being sucked into the intake pipes of plants at Indian Point.

Fred Hauck, 80, an artist and hand engraver, of 240 Lafayette Ave., Peekskill, owns almost five acres of wild, undeveloped shoreline between the county park and the former Seward estate. Con Edison also wants this parcel.

"Con Edison is taking one of the last of the beautiful shorelines of the Hudson River on Montrose Point between Peekskill and New York City on the East shore—the old Frederick Seward estate linked to America's history," Hauck asserted.

"The old Seward estate, reputed to have been visited by Lincoln several times, comprises 80 acres and about three-quarters of a mile of Hudson shoreline covered with laurel bushes, evergreens, some of virgin growth, giant hemlocks, beautiful oaks, maple, beechnut, shrubs of many kinds and all kinds of wild life, especially partridge.

Sees Nature Fading

"When Con Edison completes these installations, there will be five or more units within a two-mile area. These units are recognized by the local population as threatening prime enemy targets. At night, at times, the Indian Point units make a roaring, hissing noise when discharging surplus steam.

"What has been saved and what will be saved in the next few years will be all the true wild life areas remaining to be passed on to future generations. There will never be another chance."

Florence Ellinghaus, who lives at 98 Montrose Point Rd., grew up on the point and has just retired after 34 years with the Montrose water district. She has been asked to sell the house in which she lives with her mother, and which she only completed a few years ago.

"Certainly the river front does not need to be completely industrialized. Cannot something be built for the use and enjoyment of persons there? Are lower taxes the lone consideration?" Miss Ellinghaus asked. "The property acquired already and the parcels desired are a good portion of Montrose Point and consist of some of the very last remaining and very rare shoreline not sullied by the railroad or industry."

Frederick W. Seward
Past meets the present

NEWS Map by Staff Artist
Map shows location of Montrose Point.

Pastor's Last Shot at Crime

. . . on W2.
"Negro Students Blast Guidance System" on W4.
"County Welfare Chief on Guaranteed Annual Wage" on W6.
"Traffic Plans for Hawthorne Circle" on W9.
"State Gets Lesson From Black Beauty" on W12.
"Yonkers Doc Seeks Cure for City's Ills" on W18.

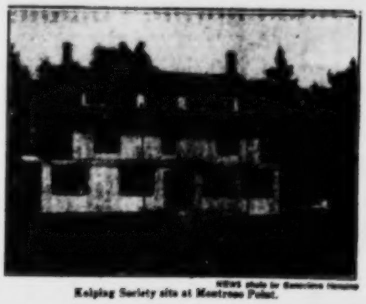
NEWS photo by Genevieve Hansing
Survey team hired by Con Edison takes borings for Montrose Point nuclear power plant from barge anchored in Hudson River.

Kolping's Bought Land in '53

The 80-acre estate on Montrose Point once owned by Secretary of State William Henry Seward's son, Frederick, was purchased in 1953 by the Catholic Kolping Society of Manhattan as a summer recreation center for its 700 members in the metropolitan area.

The Seward mansion burned to the ground some years ago but the society now uses as its main social center the original American colonial redbrick residence built on the property overlooking the Hudson in 1830 and redecorated in the 1950s.

The Catholic Kolping Society of New York, 165 E. 88 St., is a branch of the National and International Organization of Kolping Societies. This worldwide society was founded by Father Adolph Kolping in Cologne, Germany, in 1846. The purpose was to promote the spiritual and material welfare of young Catholic journeymen mechanics by providing homes for them in a religious atmosphere during their traditional travels from city to city to learn their trades. There are now more than 400 Kolping houses in many countries.



NEWS photo by Genevieve Hansing
Kolping Society site at Montrose Point.

Condemnation Threat

Excerpts from a letter sent June 10 by W. Donham Crawford, administrative vice president of Con Edison, to the Kolping society:

". . . We have offered to pay a fair and reasonable price to purchase your property, but as yet this offer has not been accepted. In addition, we have proposed to acquire for you several suitable sites as a substitute for your property but these offers, too, have not been acceptable to you.

"Under the circumstances, I must advise you that unless mutually acceptable terms for our acquisition of your property are agreed upon . . . we shall have no alternative but to take the necessary steps to acquire the subject property by the institution of condemnation proceedings."

$210 Million Nuclear Power Plant

Nuclear power plant No. 4 to be built at Montrose will be owned and operated jointly by Con Edison (80%) and Orange & Rockland Utilities, Inc., (20%). It will cost upwards of $210 million and have a capacity of 1,115,000 kilowatts. All high transmission power lines leading from it are to be laid underground.

Since 1962, Con Edison has had a nuclear plant, Indian Point No. 1, in operation at Buchanan, two miles north of Montrose. A second unit, Indian Point No. 2, is under construction at that site and scheduled for service in 1969. Site preparation and excavation have already started on a third unit, Indian Point No. 3, scheduled for service in 1971.

Recently, Con Edison, without disclosing the site to be selected, announced plans for a fourth nuclear unit scheduled for 1973 and an option taken on a fifth unit. General Electric has already been given the contract for constructing the boiling water reactor that will go into plant No. 4 and the Associated Electric Industries, Ltd., of Great Britain, has been selected to build the turbine-generator which will be part of the complex.

Please read carefully the fine articles by Jesse Brodey and by Jim Transue. They have already helped in the fight to save Kolping-on-Hudson. Please write your thanks to P.M. Flynn, Editor of the NEWS and to the Editor of the Patent Trader. Send Kolping a carbon copy of your letter. See the letter attached to this sheet for others to write for help to save our beautiful land and waters from the spectre of condemnation by Consolidated Edison Company of New York. We just cannot be party to the construction of a nest of these ugly, destructive, monstrous super-reacters which Con Ed plans to envelope Montrose Point. Write now as suggested in the letter from The Committee to Save Kolping-on-Hudson. We must act with all haste.

WRITE RIGHT NOW.
Thank You.

CATHOLIC KOLPING SOCIETY
165 EAST 88TH STREET
NEW YORK, N. Y. 10028

189GG

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The fight revolves around a huge nuclear power plant FPL now has under construction on the shores of Biscayne Bay. In this case, the use of the atom to generate electricity isn't at stake. The issue is what conservationists and other foes of the project term "thermal pollution"—a change in the ecological balance of the bay caused by dumping back into it water that has been used to cool the power plant's condensers. The result would be to raise water temperature in some parts of the bay anywhere from 10F to 18F above normal summer temperature of 92F.

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Admittedly, there's a certain amount of self-interest in Smith's search for a solution. He knows that because of the bay's shallowness and lack of circulation his plant could run into a recirculation problem because of its own effluent. In other words, under the present plan, some of the heated water might be recirculated back into the condensers, possibly causing a shutdown.

"We know this is a possibility," he says. "That's one reason we're so anxious to work out some kind of solution. But we've got to decide before long."

In the middle. When and if the problem is solved, another obstacle looms. Unless federal legislation is passed, the final word on whether FPL's nuclear plant goes into operation will not rest with AEC but with the Metropolitan Commission, following a recommendation by its pollution control officer, Paul W. Leach. And Leach is by no means happy with the prospect.

"If I am asked to offer an opinion as to whether a permit should be granted on the possibility of thermal pollution alone, I'd have to rule against the company," he explains. "But if I am asked to rule based on the total environment, the economy of the community, and the need for the plant, I'd have to say 'yes.'"

It's a decision that—rendered either way—is sure to cause a violent brouhaha. More important: It could serve as the rallying cry for fights over thermal pollution all over the U.S.

Business Week June 29, 1968

Sounding the nation's troubled waters

Senator Edmund Muskie

The subject of thermal pollution—and the probable need for quick legislative action—has caught the eye of Senator Edmund S. Muskie (D-Me.).

Last fall, Muskie asked Atomic Energy Commission authorities for their position on regulating thermal discharge from nuclear power plants and learned that AEC claims no authority on the matter—either under its licensing regulations or under an executive order that calls on all government agencies to provide leadership in cutting water pollution.

So Muskie's Public Works subcommittee on air and water pollution has been holding hearings—so far in the states of Maine, Florida, and Vermont, and in Washington, D.C.—and has discovered:

- Little real effort has been made to control waste heat discharge from nuclear plants.
- There is almost no specific information available to determine the ecological effects of large-volume hot water discharge from a nuclear facility.

What Muskie proposes to do is not yet clear. First he wants to hold more hearings (probably in the Midwest and in the Pacific Northwest) and compile more data.

He has encountered little argument about the size of the potential thermal pollution problem, however. By 1980, statisticians agree, roughly one-sixth of total water run-off in the U.S. will be needed for industrial cooling and condensing purposes. And most of this will be linked directly to nuclear power production. Just one power plant due to be built on the Connecticut River reportedly will need up to half that river's flow for cooling purposes.

Con Edison seeks tract

By JAMES TRANSUE

MONTROSE POINT — Con Edison is seeking the 52-acre tract here owned by the Kolping Society, a Catholic fraternal organization. A member of the society's board of directors says the organization does not intend to sell and would resist condemnation.

The utility wants the property plus 40 to 50 acres of surrounding lands, for its proposed fourth and fifth atomic energy plants. It now has one operating in nearby Buchanan, a second nearly completed there and a third under construction.

Robert Doyle of New Rochelle, a member of the society's board of directors, told Patent Trader that a Con Edison representative approached the society in January, although he said, he did not identify himself as such until two months later, with an offer to buy the land, which serves as the society's summer headquarters.

EARLIER this month, Mr. Doyle asserted, the company notified the directors it would start condemnation proceedings, and on July 1 landed a party of men to stake the land. He said, however, the company later said this was an error.

Charles D. Lehrfink, Con Edison's chief public relations man in Westchester, said the company had begun no court proceedings. He said the Montrose Point site was one of three sites eyed by the company, along with a tract in Verplanck and property at Bowline Point on the west side of the river.

Mr. Lehrfink said that about 100 acres would be needed. He said the company has made fair offers, and still hopes to "negotiate in good faith with the society."

He said Con Edison has offered other land in the area in exchange, although the land offered by the company was not, to his knowledge, riverside land.

Mr. Doyle said the society intends to resist the loss of its present property and that he expects to meet with Rep. Richard L. Ottinger, D-Pleasantville, this weekend to see what the congressman can do to help.

THE KOLPING Society, he said, was established more than a century ago by Father Kolping in Germany to provide a Catholic environment for journeymen in the guild system who moved from city to city.

The society now has chapters in many major American cities and most, but not all, of the present members are Catholic and of German descent. Mr. Doyle says he himself is an obvious exception, being of Irish descent.

"We are basically a family organization," he said. The original purpose of the society faded out about 30 years ago, and now it is engaged in "charitable work." Among other things, he said, the Montrose site includes a large mansion house and dining hall, and boating and swimming facilities both on the river and on two inland lakes.

CATHOLIC KOLPING SOCIETY
165 EAST 88TH STREET
NEW YORK, N.Y. 10028

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

35 • DAILY NEWS, SATURDAY, JUNE 29, 1968

Ottinger Sues Railroad Over Oil in Hudson

Charging that the Penn-Central Railroad has been polluting the Hudson River through the illegal discharge of oil waste, Rep. Richard L. Ottinger (D-N.Y.) announced yesterday that he has filed a federal anti-pollution suit against the railroad, the secretary of the Army and the Army Corps of Engineers.

Richard Ottinger

The suit, brought by Ottinger, the Hudson River Fishermen's Association and four residents, calls for an injunction against alleged oil discharges from the railroad's yards in Harmon, N.Y.

Demands Army Act

The action would also order Secretary Stanley K. Resor and the Army corps to enforce an 1888 anti-pollution law along the entire length of the Hudson.

Ottinger said he was forced to take legal action because United States Attorney Robert M. Morgenthau failed to prosecute the railroad.

The Pleasantville congressman said: "The Justice Department has failed to seek an indictment despite Corps of Engineers' inspections indicating that the railroad has been guilty of repeated violations of federal law."

Ottinger said Morgenthau's office told the corps almost seven months ago that an indictment would follow upon completion of a grand jury probe.

Ottinger Annoyed

Ottinger, who believed it was the first time a public official has brought suit in his representative capacity, said it was "a sad day when a congressman has to go into court to force our government to protect the rights of the people."

Violators of the 1888 anti-pollution law are subject to a $2,500 fine or a year in prison for each violation. Persons reporting such violations are entitled to awards of half of the fines collected.

THE NEW YORK TIMES, SATURDAY, JUNE 29, 1968

Rep. Ottinger Suing to Halt Seepage of Oil into Hudson River

By MICHAEL T. KAUFMAN

Representative Richard Ottinger has sued the Penn Central Railroad and the Army to plug oil seepage from a railroad yard into a part of the Hudson River that once was pure enough to inspire Roger Tory Peterson to write about birds.

In disclosing the suit yesterday the Democratic Congressman said that swans now drown in the oil slick and dead catfish wash ashore, their bodies glistening with slime, near the Penn Central yards at the confluence of the Hudson and Croton Rivers in Harmon, N. Y.

Mr. Ottinger said he had protested the condition to the Army Corps of Engineers more than a year ago and that last November he was informed by the corps that an inspection showed oil leaking into the river at the yard, 25 miles north of New York.

The corps said at the time that it would refer the case to the Justice Department, which could prosecute under a law prohibiting the discharge of refuse and sludge into waterways. Since then, Mr. Ottinger declared at a news conference here, nothing has been done and he has been forced to bring the civil action.

"It's a sad day when a Congressman has to go to court to force our Government to protect the rights of the people," he complained.

Mr. Ottinger, who represents Westchester and Putnam Counties and is seeking re-election this year, contended in his complaint filed in the United States District Court that the railroad yard is used to clean deisel engines and that large amounts of lubricants are used and then passed through a conduit into the river.

He added that recently the railroad had installed a skimming device that was supposed to filter out the pollutants. "This," Mr. Ottinger said, "is a Rube Goldberg device about as effective as a man with a broom trying to brush away miles of oil."

In connection with the suit which was filed Thursday a spokesman for the Penn Central said yesterday:

"We believe that we have cleared the situation up at Harmon, having had the benefit of a consulting engineer to advise and consult with us. Until such time as we see Congressmen Ottinger's statement we have nothing further to say at this time."

Mr. Ottinger said his suit, brought as a class action by a Representative in behalf of many of his constituents, was the first of its kind that he knew of. It is somewhat akin to to a stockholders' suit aimed at the director of a corporation.

Specifically, he is seeking to enjoin the railroad from fouling the river. In addition the complaint also names as defendants Secretary of the Army Stanley K. Resor and Maj. Gen. William F. Cassidy, director of the Army Corps of Engineers. These men and their agencies are charged with the prosecution of offenders of the Federal antipolluting statute.

The suit calls upon the Army agencies to enforce an 1888 Federal statute forbidding the discharge of pollution into tidal waters of New York Harbor. Violators are subject to fines of $2,500 or imprisonment for up to a year.

At the news conference held at the Commodore Hotel, next door to the railroad's Grand Central Terminal, Mr. Ottinger was joined by Robert H. Boyle, an editor of Sports Illustrated, a fishing enthusiast and a resident of Croton, and by Dominick J. Pirone, a biologist and adviser to the Hudson River Fishermen's Association, Inc.

Mr. Boyle said that at times the slick on the river is three miles long and that fish caught for miles around taste of oil. He pointed out that Croton Point, a spit of land at the merging of the Hudson and Croton, was a favorite haunt of Roger Tory Peterson, the ornithologist. "I'd hate to know how it would inspire him today," he added.

Mr. Boyle said that last August he was boating on "seas of oil" adding, "I was afraid to smoke in the boat, it was a fire hazard."

Mr. Pirone showed pictures that he said were taken on Thursday evening of the oiled and troubled waters.

"This could be one of the greatest fisheries in the world," he said, "The river is so unique that this is just a crime."

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

The Daily Argus
A Member of the Gannett Group
MOUNT VERNON, N.Y., SATURDAY, JUNE 29, 1968

Ottinger Brings Suit Over Hudson Pollution

NEW YORK — A Westchester congressman has filed suit against the Penn-Central Railroad, the Secretary of the Army and the Army Corps of Engineers to stop what he said was the railroad's repeated pollution of the Hudson River through seepage of fuel oil from its yards at Harmon.

The suit was filed in U.S. District Court here by Rep. Richard L. Ottinger, a second-term Democrat from Westchester, who has been involved in a series of conservation battles, particularly those involving the Hudson River.

A unique feature of the suit is that it was brought as a class action by the congressman on behalf of his constituents. Mr. Ottinger said he believed it was the first time a suit has been brought by a public official in his representative capacity. He called it "a sad day when a congressman has to go into court to force our government to protect the rights of the people."

Other plaintiffs in the suit are the Hudson River Fishermen's Association, Inc.; Richard Garrett of Ossining, the association's president; Robert H. Boyle, a conservation writer from Croton-on-Hudson; Dominick J. Pirone of Mount Vernon, a marine biologist, and Dr. James Alexander of Armonk, associate professor of biology at Fordham University.

The suit calls upon the Secretary of the Army and the Corps of Engineers to enforce federal laws prohibiting pollution of the Hudson's tidal waters. The Corps of Engineers is responsible for enforcing an 1888 law which forbids discharge of pollution into the tidal waters of New York Harbor. Violators are subject to fines of $2,500 or imprisonment for up to a year. Each new discharge is a separate violation.

In a twelve-month period starting July 1, 1966, the Corps of Engineers investigated 758 reported violations of anti-pollution laws affecting the Hudson River, 535 involving the area from Troy to Lower Bay. A total of 124 cases was forwarded to U.S. Attorneys for legal action and 91 were actually prosecuted. A total of $48,383 in fines was collected.

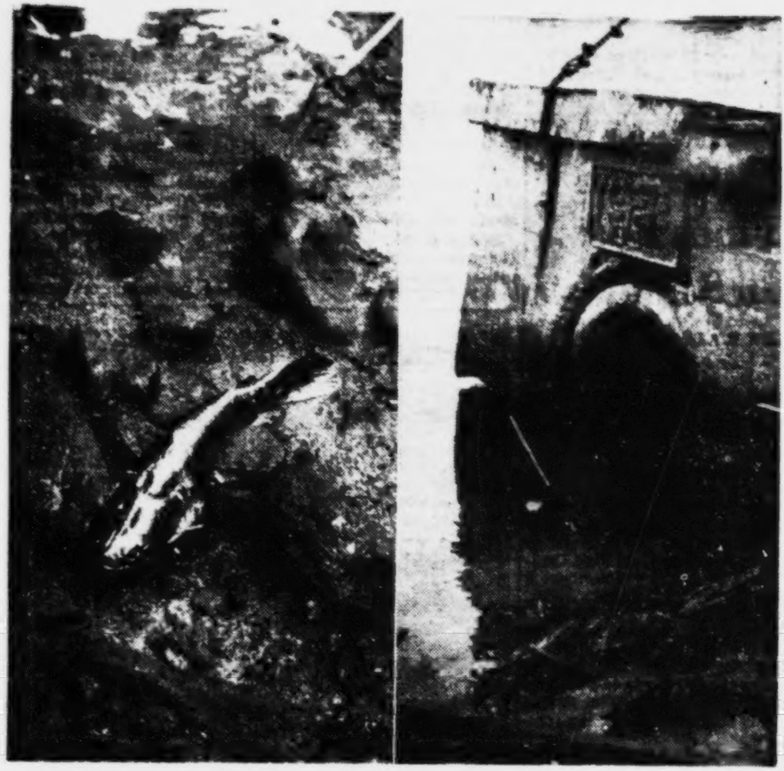
Mr. Ottinger said he has been pressing for Corps of Engineers action since the spring of 1967, when local residents reported that oil seepage from the railroad's Harmon yards was killing fish and generally fouling the Hudson's waters. Corps officials investigated at his request and confirmed the reports, he said.

Congressman Ottinger made public a December 8, 1967, letter from the Corps of Engineers stating:

"On 11 August 1967, the results of the investigations were forwarded to the United States Attorney, Southern District of New York, with a request that legal proceedings be instituted against the New York Central System. On 17 October 1967, the District Engineer requested the United States Attorney to furnish information on the status of the cases referred to him for legal proceedings. The United States Attorney advised that the New York Central Railroad case was awaiting Grand Jury action. He stated that an indictment would be filed against the company as soon as the Grand Jury completes its inquiry."

Mr. Ottinger said he decided to file the suit because "the Justice Department has failed to seek an indictment despite Corps of Engineers inspections indicating that the railroad has been guilty of repeated violations of federal law." He pointed out that almost seven months have elapsed since the U.S. Attorney told the Corps of Engineers that only completion of Grand Jury action was needed before an indictment would be filed.

Assisting Mr. Ottinger in prosecution of the suit is David Sive, a Rockland County attorney and chairman of the Atlantic Chapter of the Sierra Club.



REPEATED POLLUTION of the Hudson River is the subject of a suit filed by Congressman Richard L. Ottinger against the Penn Central Railroad, the secretary of the Army and the Army Corps of Engineers. The congressman charges that oil seepage from the railroad's Harmon yards is killing fish and fouling the water, and the Army agencies cited are responsible for enforcing pollution laws. Mr. Ottinger believes that this is the first time a public official has brought a suit representing his constituency. Picture shows oil seepage and its deadly results.

(Story on Page 11)

UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK
- -X

RICHARD L. OTTINGER, HUDSON RIVER
FISHERMEN'S ASSOCIATION, INC.,
RICHARD J. GARRETT, ROBERT H. BOYLE,
DOMINICK J. PIRONE and JAMES ALEXANDER,

Plaintiffs,

-against-

PENN CENTRAL COMPANY, STANLEY K. RESOR,
INDIVIDUALLY and as Secretary of the Army,
Department of Defense, U.S.A., and
WILLIAM F. CASSIDY, individually and as
Director of the Corps of Engineers of
the U.S. Army,

Defendants.

- -X

Plaintiffs, for their complaint, allege as follows:

AS AND FOR A FIRST CLAIM ON BEHALF
OF ALL PLAINTIFFS:

1. This action arises under the Constitution of the United States, Amendment 5; and Sec. 1, 25 Stat. 209, as amended, 33 U.S.C. Sec. 441, as amended.

2. At all times hereinafter mentioned:

(a) Plaintiff RICHARD L. OTTINGER (hereinafter "OTTINGER") has been and is a Member of Congress, representing the 25th Congressional District of the State of New York; the said district consists of part of Westchester County and all of Putnam County, and includes all of the shoreline and bed of the Hudson River within the said counties;

(b) Plaintiff HUDSON RIVER FISHERMEN'S ASSOCIATION, INC. (hereinafter the "ASSOCIATION") has been and is a membership corporation created and operating under the laws of the State of New York; its purposes and objects include the preservation and conservation of the Hudson River and Valley and the resources thereof;

(c) Plaintiff RICHARD J. GARRETT (hereinafter "GARRETT") has been and is a citizen of the State of New York and a resident of the Town of Ossining, County of Westchester, and the President and a Director of the ASSOCIATION;

(d) Plaintiff ROBERT H. BOYLE (hereinafter "BOYLE") has been and is a citizen of the State of New York and a resident of the Village of Croton, County of Westchester, and a Director and member of the ASSOCIATION;

(e) Plaintiff DOMINICK J. PIRONE (hereinafter "PIRONE") has been and is a citizen of the State of New York and a resident of the City of Mount Vernon, County of Westchester;

(f) Plaintiff JAMES ALEXANDER (hereinafter "ALEXANDER") has been and is a citizen of the State of New York and a resident of the hamlet of Armonk, County of Westchester;

(g) Defendant PENN CENTRAL COMPANY (hereinafter "CENTRAL") has been and is a railroad corporation created and operating under the laws of the State of Pennsylvania; upon information and belief it operates large numbers of freight and passenger trains, which travel on tracks along the east shore of the Hudson River between the City of New York and numerous other cities north and west thereof, including Albany, Buffalo, Detroit and Chicago;

(h) Defendant STANLEY K. RESOR (hereinafter "RESOR") has been and is Secretary of the Army, Department of Defense, U.S.A.;

(i) Defendant WILLIAM F. CASSIDY (hereinafter "CASSIDY") has been and is the director of the Corps of Engineers of the U.S. Army.

3. Upon information and belief, for a number of years prior to and up to the date of the commencement of this action, CENTRAL has maintained at Harmon, near Croton, Westchester County, New York, railroad yards, a switching station and related facilities, at which large numbers of freight and passenger trains are halted each day and the engines switched, diesel locomotives replacing electric locomotives on northbound trains and electric locomotives replacing diesel locomotives on southbound trains. In connection with such switching and other operations, CENTRAL uses large quantities of diesel oil and other fuel and lubricants.

4. Upon information and belief, in connection with such switching and other operations large quantities of fuel and other wastes are discarded or permitted to flow, seep or leak directly into the Hudson River. Upon information and belief, the flowage, seepage and leakage of such waste products constitute a major pollutant of the Hudson River.

5. Upon information and belief, such pollution, caused and permitted by CENTRAL, has rendered large areas of the Hudson River uninhabitable by and incapable of supporting the life of fish and other marine creatures, has created a great public health hazard, and has destroyed and is destroying the natural and scenic beauty of the Hudson River and shoreline in and near the area of such pollution.

6. Defendants RESOR and CASSIDY are charged with the enforcement, by prosecution of offenders and otherwise, together with the Department of Justice, of the statute cited above.

7. Upon information and belief, defendant CENTRAL has caused and permitted such pollution knowingly and deliberately and despite numerous requests and demands by large numbers of affected persons, firms and organizations, including municipal, state and federal agencies, that it cease causing and permitting such pollution.

8. In and by such pollution, defendant CENTRAL has been and is knowingly, deliberately and flagrantly violating the provisions of Sec. 1, 25 Stat. 209, as amended, 33 U.S.C. Sec. 441, as amended, providing that:

> "The placing, discharging, or depositing, by any process or in any manner, of refuse, dirt, ashes, cinders, mud, sand, dredgings, sludge, acid, or any other matter of any kind, other than that flowing from streets, sewers and passing therefrom in a liquid state, in the waters of any harbor subject to sections 441-451b of this title, within the limits which shall be prescribed by the supervisor of the harbor, is strictly forbidden, and every such act is made a misdemeanor, and every person engaged in or who shall aid, abet, authorize, or instigate a violation of this section, shall, upon conviction, be punishable by fine or imprisonment, or both, such fine to be not less than $250 nor more than $2,500, and the imprisonment to be not less than thirty days nor more than one year, either or both united, as the judge before whom conviction is obtained shall decide, one-half of said fine to be paid to the person or persons giving information, which shall lead to conviction of this misdemeanor. As amended Aug. 28, 1958, Pub. L. 85-802, Sec. 1(1), 72 Stat. 970."

9. Plaintiffs and, upon information and belief, numerous other persons have heretofore and on several occasions informed defendants RESOR and CASSIDY of the said pollution of the Hudson River by defendant CENTRAL, and have been informed that the matter has been referred to the office of the U. S. Attorney for the Southern District of New York. Upon information and belief, said U. S. Attorney has not taken, and will not in the forseeable future take, any action the effect of which will be to halt or substantially lessen the said pollution of the Hudson River by defendant CENTRAL.

10. Said pollution of the Hudson River by defendant CENTRAL:

(a) is destructive of the rights of plaintiffs in and to the Hudson River, including the right to fish from, to boat in, and to use and enjoy the scenic beauty of, the River, as a source of recreation and inspiration; and

(b) impairs and lessens the use and enjoyment by them of residences owned by members of the ASSOCIATION and by the individual plaintiffs, in the Hudson Valley near the River, which rights are granted and protected by Amendment No. 5 to the United States Constitution and by the statute quoted and cited above. The impairment of such rights constitutes an unconstitutional deprivation of plaintiffs' liberty and property, and a violation of plaintiffs' rights under Sec. 1, 25 Stat. 209, as amended, 33 U.S.C. Sec. 441, as amended.

11. Upon information and belief said pollution of the Hudson River by defendant CENTRAL will continue unless enjoined by this Court.

12. Plaintiffs have suffered and will continue to suffer irreparable injury from the said pollution of the Hudson River by defendant CENTRAL and have no adequate remedy at law.

AS AND FOR A SECOND CLAIM ON BEHALF OF ALL PLAINTIFFS:

13. Plaintiffs repeat and reallege each and every allegation set forth in paragraphs 1, 2, 3, 4, 5, 6 and 7, of this Complaint with the same force and effect as if here fully set forth and repeated.

14. Said pollution of the Hudson River by defendant CENTRAL constitutes an unlawful public nuisance.

15. As a result of the said pollution of the Hudson River by defendant CENTRAL, plaintiffs have suffered and are suffering special, particular and irreparable damage and injury, in that:

(a) upon information and belief, the ability of members of the ASSOCIATION to fish in the Hudson River has been substantially curtailed owing to the area of the River so polluted being rendered uninhabitable by large numbers of fish and other marine animals and plants;

(b) the value of the residences of each of the individual plaintiffs and other members of the ASSOCIATION has been and is being substantially lessened owing to the fact that residing in and near the Hudson River has become less attractive and desirable than it would be in the absence of such pollution by defendant CENTRAL;

(c) the individual plaintiffs and other members of the ASSOCIATION have been and are required to expend substantial moneys and other resources to secure elsewhere for themselves and their families the recreation and inspiration which would otherwise be available from those portions of the Hudson River and Valley so affected by the pollution of the River by defendant CENTRAL.

16. Plaintiffs repeat and reallege each and every allegation set forth in paragraphs 11 and 12 of this Complaint with the same force and effect as if here fully set forth and repeated.

AS AND FOR A THIRD CLAIM BY PLAINTIFF OTTINGER ON BEHALF OF HIMSELF AND OF ALL OTHER RESIDENTS OF THE 25TH CONGRESSIONAL DISTRICT OF THE STATE OF NEW YORK ADVERSELY AFFECTED BY THE WRONGFUL AND UNLAWFUL ACTS OF DEFENDANTS DESCRIBED IN THIS COMPLAINT:

17. OTTINGER repeats and realleges each and every allegation set forth in paragraph 1 of this Complaint with the same force and effect as if here fully set forth and repeated.

18. OTTINGER brings this action on behalf of himself and of all other residents of the 25th Congressional District of the State of New York adversely affected by the wrongful and unlawful acts of defendants described in this Complaint. The members of the said class of persons number many thousands and it is impracticable to bring all of them before this Court. There are questions of law and fact presented herein which are common to all of the members of the said class of persons, and the claim of OTTINGER is typical of all of the members of the said class. OTTINGER is uniquely able to protect, and will fairly and adequately protect, the interests of all of the members of the said class.

19. At all times hereinafter mentioned:

(a) Defendant CENTRAL has been and is a railroad corporation created and operating under the laws of the State of Pennsylvania; upon information and belief it operates large numbers of freight and passenger trains, which travel on tracks along the east shore of the Hudson River between the City of New York and numerous other cities north and west thereof, including Albany, Buffalo, Detroit and Chicago;

(b) Defendant RESOR has been and is Secretary of the Army, Department of Defense, U.S.A.;

(c) Defendant CASSIDY has been and is the director of the Corps of Engineers of the U.S. Army.

20. OTTINGER repeats and realleges each and every allegation set forth in paragraphs 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 14 of this Complaint with the same force and effect as if herein fully set forth and repeated.

WHEREFORE, plaintiffs pray for:

(a) judgment enjoining defendant CENTRAL from polluting the Hudson River by the acts and practices hereinbefore described in this Complaint;

(b) judgment directing defendants RESOR and CASSIDY to enforce, and secure compliance by defendant CENTRAL with, the provisions of Sec. 1, 25 Stat. 209, as amended, 33 U.S.C. Sec. 441, as amended;

(c) such preliminary relief as may be necessary to prevent further irreparable injury to plaintiffs pending the trial of this action and the making and entry of final judgment; and

(d) such other and further relief as this Court may deem just and proper, together with the costs and disbursements of this action.

RICHARD L. OTTINGER
Pro se and Attorney for all
other Plaintiffs
Office & P.O. Address
c/o Winer, Neuburger & Sive
445 Park Avenue
New York, New York 10022

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

120 The Esplanade
Mount Vernon, N.Y. 10553
July 8, 1968

Honorable Stewart L. Udall
Secretary of the Interior
Department of the Interior
Washington, D.C.

Dear Mr. Udall:

The Hudson River Fishermen's Association respectfully requests active representation on the Technical Advisory Committee of the on-going study of the Hudson River fisheries being conducted under the auspices of the U.S. Fish and Wildlife Division of the U.S. Department of the Interior and the New York State Conservation Department and being paid for by Consolidated Edison Company of New York, Inc., a proponent in plans and projects which may materially affect the quality of the Hudson River and its fisheries.

The Hudson River Fishermen's Association represents the citizens of the State and the Nation who would be most affected by any change in the presently productive River environment.

Our request is based on the following:

The Hudson River Fishermen's Association membership includes ... commercial fishermen, whose economic future depends upon a productive River; ... sport fishermen whose recreation depends upon the perpetuation and improvement of the River fishery; ... scientists whose qualifications include extensive backgrounds in marine, estuarine and fresh water aquatic biology and ecology; ... and conservationists whose concern is for a proper definition of " wise use of resources ".

We would further submit the recent history of the River as a compelling qualification. Massive destruction of Hudson River fish populations was so flagrantly ignored by authorities in prior years that a Congressional investigation was necessary.

Data from present studies for expert evaluation is virtually unavailable-- yet conclusions and decisions are apparently being made either from this material or in the absence of this material. For example, testimony before the Federal Power Commission and statements regarding the presently proposed Hudson River Expressway incorporate data which are now not accessible by the affected citizens. As further indication of the importance of day to day literature availability, we would submit recent reference to "new data" by a Consolidated Edison engineer (meeting of May 10, 1968 of six directors of the Hudson River Fishermen's Association with four Consolidated Edison vice presidents), who apparantly was equipped to discuss estuarine biology.

HUDSON RIVER FISHERMEN'S ASSOCIATION
Box 725
Ossining, New York 10562

As a resource, the Hudson River is important to government and industry, but even more important to those whose livelihood and/or recreation relies on the decisions of government and industry.

We offer competence and dedication in determining the future of the River. Our representative would be Dr. James E. Alexander, chemical oceanographer of Fordham University. He is also assistant to the director of the Louis Calder Conservation and Ecology Study Center of Fordham University in Armonk, N.Y.. Dr. Alexander has directed the progressive general biology course at Fordham University and has taught both oceanology and marine and fresh water ecology at the graduate level. He is now directing a summer program in limnology at the Calder-Fordham Center. His training in the fields of physical, chemical and biological oceanology was at the University of Miami. A copy of his resume' is enclosed.

Mr. Secretary, we represent the people who are most affected by any decision regarding the Hudson River. We propose expert and reasonable representation and hope that we may rely upon an early affirmative response. As citizens, taxpayers and users of the resource, we feel we are not asking too much.

Respectfully submitted,

Dom Pirone

Dominick J. Pirone
Corresponding Secretary
HUDSON RIVER FISHERMEN'S
ASSOCIATION, Inc.

copy to: Honorable R. Stewart Kilborne
Commissioner
New York State Conservation Department

Reprinted from December 11, 1967 issue of
Sports Illustrated

One of the most serious problems facing the United States today is the use of the environment, especially in regard to the conservation of wildlife resources. This magazine has often reported on threats to these values, among them the dredging of oyster reefs in Galveston Bay, the plan to strip-mine in the North Cascades and the scheme to convert the Hudson River into an electric storage battery. All these threats, and all the conservation battles resulting from them, have one thing in common—they need never have occurred if there had been sound guidelines and policies to protect resources from indiscriminate abuse.

With this in mind Sports Illustrated assigned Senior Editor Robert H. Boyle and various correspondents to the task of discovering what measures are needed to insure that our wildlife resources will not be impaired, compromised or obliterated, either wholesale or piecemeal. The issue is not one of "people or ducks." Progress is people and *ducks. There is no reason why we cannot have both. In compiling this report, Boyle and SI's correspondents interviewed scientists, legislators and conservationists across the country. Not everyone made the same points—but certain common themes were struck. These recommendations merit strong consideration.*

HOW TO STOP THE PILLAGE OF AMERICA

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Many of our present environmental difficulties can be attributed to the fact that no single person, agency, bureau or department in the Federal Government has an overall view of what is happening to our land and waters. No one is providing any sense of direction or continuity. Action on a problem comes, if at all, only in response to disaster or after persistent clamor by concerned citizens. Sporadic White House interest in "natural beauty" is so superficial as to be dangerous. The public is gulled into thinking problems are being met. Natural beauty is cosmetics conservation. Instead of applying pancake makeup to the landscape, we should be stopping cancer.

● An essential first step would be establishment by Congress of a National Council of Ecological Advisers. This council would offer recommendations for the improvement of the environment and the use of resources and draw attention to threats that might be overlooked—or even posed—by partisan interests, such as the Federal Power Commission or the Defense Department. The council would take a broad view and yet not hesitate to deal with specifics. The council, in brief, should have complete freedom of inquiry and suggestion. It should be able to sound an alarm over the manufacture and sale of detergents or question the approach, say, of the current Appalachia program, in which millions of dollars are being spent on highways for the region instead of on reclamation of the degraded lands and waters (the reclamation project would provide as many or more jobs for the impoverished residents of the area). Ideally, the council should include senior scientists who have shown independent and thoughtful concern for the affairs of mankind, such as René Dubos of the Rockefeller University, Lionel A. Walford of the Fish and Wildlife Service, S. Dillon Ripley, secretary of the Smithsonian, A. Starker Leopold of the University of California, Paul Sears of Yale or Robert Cushman Murphy of the American Museum of Natural History. This nucleus would be supplemented by conservationists, such as David Brower of the Sierra Club, Richard Pough, past president of The Nature Conservancy, Rod Vandivert of Scenic Hudson, and a landscape architect, a historian perhaps and representatives from industry, labor and agriculture. There should be no room for the scientific hack or the politician just turned out of office and looking for a new slot at the public trough. Precedent exists for the establishment of such an

continued

SOME OF THE LEADERS in the movement to halt the despoliation of our land and waters are (*clockwise, from upper left*) Irving Like, David Brower, Joseph Mihursky, Philip H. Lewis Jr., Rod Vandivert.

organization in the Council of Economic Advisers, which has proved influential.

- State legislatures would do well to establish similar conservation councils of their own. All too often state governments have complained when the Federal Government finally moved in to stop a long-standing abuse. It is time state governments assumed responsible positions. There is no more time for excuses. With the exception of a few states—for instance, Massachusetts and Wisconsin (their efforts are noted below)—most states have refused to recognize environmental problems.
- An ecological inventory of the United States should be conducted both by the Federal Government and the 50 states, down to the town level. This inventory should list all natural resources, ponds, lakes, streams, agricultural lands, forests, wetlands, parks and preserves, along with notations about their value or uniqueness. Information of this sort, essential to any rational use or planning, is not now available. The information gathered should be evaluated, coded and computerized. A power company seeking a site could then be offered a number of locations where the plant would not inhibit the spawning, say, of salmon or striped bass, and scientists who are interested in preserving the gene bank would be able to draw upon the information to locate undisturbed habitats where animals or plants flourish in their natural state. There are, literally, thousands of applications for such material, ranging from recreational to educational use.

States need not wait for the Federal Government to prompt them into undertaking surveys of their own. Wisconsin and Massachusetts have already done outstanding work. Several years ago Gaylord Nelson, then governor and now a Senator from Wisconsin, invited Philip H. Lewis Jr., a landscape architect from the University of Illinois, to conduct a survey. Appointed a professor at the University of Wisconsin, Lewis set to work with a team of assistants to inventory and map the state. The team noted waterfalls, mineral sites, trout streams, marshes, historic sites and other areas of value. Most resources fell into what Lewis calls "environmental corridors" along watercourses. In deciding what to buy or protect, Wisconsin set up a point system of priorities and did a demand study for each possible acquisition. A specific sales tax provided $50 million, and, in the first year of funding, Wisconsin acquired 33,000 acres either by outright purchase or through scenic easements. (By granting the state a scenic easement, a private landowner agrees not to build; in exchange, he receives compensation.) Thus far the Wisconsin program has been going along splendidly, with strong popular support. Last year Republicans and Democrats joined to pass a water program, giving counties authority to zone land 300 feet back from each river and stream and 1,000 feet back from each lake. The counties have two years to establish zoning ordinances. If a county fails to act, the state will do the zoning.

Massachusetts, racked by periodic scandals, is not a state ordinarily thought of as being among the most advanced in good-government practices. Yet when it comes to caring for the basic natural environment, Massachusetts could give lessons to others. The Massachusetts Department of Natural Resources already has inventoried marine assets, salt marshes, outdoor recreation areas, open-space needs and inland marshes. This enlightened outlook comes not so much from on high—though Resources Commissioner Robert Yasi happens to be forward-looking—but from the concern of the people. As a result of public pressure, the state legislature in 1958 enabled cities and towns to establish conservation commissions. Composed of three to seven members, each commission surveyed the natural resources of value in its own area and under a point system made recommendations for zoning or acquisition of land. As public interest grew, the state legislature agreed to finance 50% of the acquisitions.

- The Department of the Interior should be reorganized as the Department of Natural Resources. This suggestion was first made in the 1930s, and in 1949 the Hoover Commission urged it again. The proposed department would have full charge of water resources, fish and wildlife, public lands and electric power. It would take over the Forest Service from the Department of Agriculture. The new department also should either take in or have direct veto over the civil functions of the U.S. Army Corps of Engineers and power projects of the Federal Power Commission and the Atomic Energy Commission.

Management of natural resources is now strewed across the bureaucratic landscape, and as a result there is next to no coordination and little official concern. The new department would give thrust to conservation issues and bring problems into sharper focus.

- There is a need for more state and national parks and better management of those we already have. For example, at famous Yellowstone the Park Service's stewardship has become, in the words of Naturalist Peter Farb, "an act of official vandalism." Concessionaires have been encouraged to build a supermarket, trinket shop, laundry and 1,000 shoddy cabins within the park, while the Service itself constructed a parking lot that destroyed Daisy Geyser, one of the main attractions. Noel Eichorn, who is doing a study of the national parks for the Conservation Foundation, reports that in most parks concessionaires are so firmly entrenched that they are telling the Park Service what to do.

We need new parks not only to meet future needs but to relieve pressure on those we have. The crush of visitors to certain national parks has been such that the rationing of admissions is being considered. Parks should be chosen so as to include representative samples of all kinds of habitat and scenery in the United States. William Bronson of the California Tomorrow association has suggested the establishment of a Napa Valley National Vineyard. The Napa Valley is one place that the hand of man has blessed, but "development" for tract houses could destroy it. Given protection, the Napa Valley could remain productive, its beauties unimpaired. The same might be done for other high-quality agricultural lands. (In California 140,000 acres of farmland annually succumb to the developer's bulldozer.)

- We must end the engineer's tyranny over the environment. As Kenneth Boulding, professor of economics at the University of Michigan, has remarked, "The domination of almost all our resources policy by engineers and people of this kind is utterly disastrous." Engineers have technical competence to offer, but often a limited outlook as well. Putting an engineer in charge of a resource such as a river basin is no smarter than hiring a plumber to design a fountain. Then again, as William Bronson has written, "Engineers have a tradition of first establishing . . . all manner of monstrosities, and then finding economic justification for building them."

If bureaucracies—among them the Corps of Engineers, the Bureau of Reclamation, the Federal Power Commission and the Atomic Energy Commission—are not curbed by creation of the proposed Department of Natural Resources, their powers should be subject to review under a strengthened Fish and Wildlife Coordination Act. The present act is so weak as to be useless. As the act now stands, most of these agencies are required only to *consult* with the Secretary of the Interior about possible harm to fish and wildlife by a project. They are under no obligation to heed the Secretary's advice—and they seldom have. They are engineering-oriented. Moreover, the AEC and the FPC show disquieting signs of having become the captives of the very industries they were set up to police in the public interest.

- Specific congressional legislation is needed on thermal pollution. The AEC does not regulate the temperatures of cooling water discharged into the body of water from which it was taken. Nuclear power plants, which use great amounts of water to cool their reactors, pose tremendous dangers. Hot water discharged into a bay, river or even the ocean can create biological deserts. A 3° or 4° temperature difference can be critical. Nuclear plants discharge water 11° to 23° hotter than it was on intake. More than 100 nuclear plants are on the drawing boards, and by 1980 the power industry will be using one-fifth of the total freshwater runoff of the United States for cooling. In a recent scientific paper Dr. Joseph A. Mihursky and V. S. Kennedy of the Chesapeake Biological Laboratory noted, "It is obvious a very serious problem will exist in the near future." There already has been one scandalous fish kill at a nuclear plant (*A Stink of Dead Stripers*, SI, April 26, 1965), but as long as aquatic life is not being killed by radiation, the power industry and the AEC are unconcerned. The temperature of discharged water can be controlled, but the commission apparently has other fish to fry. When Congressman John Dingell asked Harold Price, Director of Regulation for the AEC, why the commission was not concerned about thermal pollution, Price replied, "I guess we don't feel that the initiative for doing something about it rests with us."

- Strong congressional legislation is needed to afford protection to coastal estuaries and wetlands. The marshes, bay bottoms and estuaries, where salt and fresh water meet, are the most valuable and productive areas on the North American continent. Marshes, for instance, are up to six times richer than the average wheat land. Yet nowhere has destruction been more savage and blind than along our coasts. Destroying wetlands or fouling estuaries makes as much sense as burning down a bank, yet the destruction continues at an appalling rate. Connecticut, for instance, now has only 20 square miles of good wetland area left. The remainder lies buried under highways, garbage dumps, factories and houses. In actuality the estuarine-wetland complex that runs from Massachusetts to Florida is one of the natural wonders of the world.

In recent years persistent encroachment and defilement has caused a dramatic decline of fish—in both commercial and sports catches. The American Littoral Society reports that between 1960 and 1965 the total catch of 18 coastal species slumped from 1.4 billion pounds to 700 million pounds—exactly half, in only five years' time. Among the fishes that are dependent on the Atlantic Coast estuaries are alewives, mackerel, Atlantic sturgeon, blackback flounder, black drum, blackfish, bluefish, croaker, fluke, king whiting, menhaden, mullet, porgy, red drum, sea trout, shad, short-nosed sturgeon, spearing, spot, striped bass, summer herring, tomcod, weakfish and white perch. Destroy the estuaries, rip up bay bottoms, fill in marshes and you destroy these species. It does no good to go out in the ocean. The ocean isn't "full of fish." The ocean is a desert by comparison with inshore Cape Cod, Long Island Sound, the Hudson River, Great South Bay, Chesapeake Bay, Pamlico Sound, *et al.*

The coastal fishery resources of the United States are the greatest single wildlife resource this country possesses. It offers respite to millions of people and is worth billions of dollars. So far only one state, Massachusetts, has effectively moved to protect this resource. Massachusetts law prohibits alteration of a salt marsh. When one developer fought this law, the court upheld the state, finding, "Broad Marsh is a 'salt marsh' necessary to preserve and protect marine fisheries. . . . Property is acquired by private citizens with the tacit understanding that it shall not be used to the detriment of the public, and the legislature is authorized to take action to prevent such detrimental use." Owners of marshland who seek compensation can have it set by court. So far no one has applied.

Not every state has the vigor of Massachusetts in protecting its coastal resources. New York, for example, is a study in futility. The bays and wetlands of Long Island are not protected from abuse; they are not even considered navigable waters, hence they are subject to unnecessary dredging, filling or other desolation. A favorite trick is to mine sand and gravel under the subterfuge of creating a navigation channel. An ocean liner could be floated in some of the gouges.

Even if New York took prompt and proper action, problems would still remain for numerous species of fish that move up and down the coast. If, for instance, North Carolina decided to seal off or fill in its coastal sounds the fluke population would be wiped out. Fluke eggs are laid at sea, but the larval fish are carried into the sounds by currents, and there they stay in the shallow waters, protected from larger predators and feeding on the crabs, baitfishes and marine worms of the estuary. When the fluke are about six inches long, they begin working their way up along the coast to waiting fishermen in New Jersey, New York and Massachusetts. If the North Carolina fishery were destroyed, fishermen in the states to the north could protest, but they could not enforce any reform in North Carolina.

Sometimes fishermen are not even aware of the reasons a species suddenly disappears. This has been the case with the weakfish, which was a tremendously popular fish in

New York and New Jersey waters until 15 years ago. Despite official assurance that the weakfish would always remain abundant, lo, it suddenly vanished. A number of reasons were given, overfishing being the most prominent. Now marine biologists strongly suspect that commercial fishing boats working southern waters in quest of "trash" fish for cat food have been taking juvenile weakfish in the catch. The weakfish never get to move north because they are in some cat's belly. The pity of it is that cats would be just as well fed with a species of fish that has no other economic value. Contrary to popular impression, neither the Bureau of Commercial Fisheries, the Bureau of Sport Fisheries and Wildlife nor any section of the Interior Department has any control of ocean fishes. (Even the President's Science Advisory Committee is misinformed; in *Effective Use of the Sea*, the committee reported that the Bureau of Commercial Fisheries governs ocean fishing.)

Obviously, legislation is needed to protect the estuarine environment and the fishes in it. Inasmuch as the states have abdicated responsibility, and inasmuch as the fish are migratory and do not recognize state lines, the Federal Government should have authority to protect the aquatic resources of estuaries. To be sure, there will be some states-righters who will protest against "federal invasion," but the harsh truth is that the states' navigable waters are already subject to federal invasion of the worst sort, in the form of the Corps of Engineers and the Federal Power Commission, and a new federal club is needed to beat them off.

- Serious consideration should be given to a conservation amendment to the Constitution. This idea has been advanced by Irving Like, a Long Island attorney and conservationist who helped to establish the Fire Island National Seashore. Like's idea is based, in part, on the premise that a national ecological survey and inventory will be taken. Like says, "Constitutional amendments are necessarily brief. This amendment should not include a shopping list, and I suggest the following draft:

"*The right of the people of the United States to enjoy the outdoors and their heritage of natural resources and natural beauty shall not be violated.*

"*The Congress shall, at least once every five years, designate those lands and waters of the United States and its possessions, now owned or hereafter acquired, which because of their unusual, natural, wilderness, scenic or historic character, shall be kept forever inviolate and administered for the use and enjoyment of the American people in such manner as will preserve their irreplaceable characteristics and leave them unaltered and unspoiled for future use and enjoyment.*

"*No federal agency, body or authority shall be authorized to exercise the power of condemnation, or undertake any public work, issue any permit, license or concession, make any rule, execute any management policy or other official act which vitally affects the people's heritage of natural resources and natural beauty, on the lands and waters now or hereafter placed in the public domain, without first giving reasonable notice to the public and holding a public hearing thereon, and any official act which involves the public domain, the natural resources of the United States, and which vitally affects the quality of the natural environment, shall be subject to judicial review and such other forms of review as may be enacted by Congress.*"

Like's amendment was the basis for a similar measure he advanced this year for the New York State Constitutional Convention. The delegates adopted it almost unanimously, but it went down the drain with the rest of the new constitution in the November 7 election.

- The use of persistent toxic pesticides or long-range poisons should be barred. The worst of the pesticides are the chlorinated hydrocarbons: aldrin, DDD, DDT, dieldrin, heptachlor and toxaphene. A study submitted to the late President Kennedy recommended the elimination of such chemicals, but action has been slow in coming. The difficulty with the chlorinated hydrocarbons is that they take a long time to break down (as much as fifteen years for DDT) and they concentrate in the fatty tissues and organs of living creatures, at times killing them or rendering them sterile. Toxic pesticides are not the only problem. Government poisoners in the West have been indiscriminate in spreading baits for coyotes injected with compound 1080, which is also deadly to other wildlife and domestic dogs.

Detergent manufacturers, seeking new washday miracles, came up with the ABS detergents, which do not readily break down in water and can be lethal to aquatic life. When those detergents started foaming up in water supplies there was an outcry, and now the manufacturers are turning out so-called "soft" detergents. These are low in suds but rich in phosphates that can trigger detrimental algal explosions. The point of all this is that no one, no private citizen, no company, no government agency, should be allowed to inject a persistent poisonous chemical into the lands and waters of the U.S.

- We need to take a new look at state and federal tax policies dealing with land values and conservation. The Sierra Club, the most vigorous national conservation organization, has suffered a loss in donations because the Internal Revenue Service, angered by club newspaper ads protesting the proposals to dam the Grand Canyon, has threatened to rule that donations are no longer deductible. If the ruling comes, the Sierra Club intends to press a court fight, but until it is resolved, other national conservation groups, not as bold to begin with, will shy away from public issues of importance.

We might look to see if our tax policies encourage wise use of the land. There is a strong suspicion that they do not and that they are rigged in favor of the developer, the realtor and the modern version of the ambulance chaser, the lawyer who specializes in zone busting. If inequities exist, they should be corrected.

- We need prompt and vigorous enforcement of federal and state antipollution laws. The Federal Water Pollution Control Act of 1966 is promising, but will it be enforced with vigor and dispatch? We have had laws, sound laws, on the books for years, but the problem is they are rarely enforced. For instance, the Federal Refuse Act of 1899 forbids the dumping of garbage, cinders, sand or mud or refuse of any kind into the navigable waters of the United States. The maximum penalty is a $2,500 fine and a year in prison; yet government agencies charged with enforcement, most notably the Corps of Engineers, have looked the other way in the face of obvious violations. Indeed, when a Corps official was asked recently why the law had not been enforced against a couple of continuous polluters, the official replied, "We're dealing with top officials in industry, and you just don't go around treating these people like that."

- We need state and federal laws to cover industrial kills of fish and wildlife by any means whatsoever. There have been a number of enormous wildlife kills in recent years, and the perpetrators have gotten off without paying a cent. A private citizen who takes illegal fish or game is subject to fine, loss of license and probably imprisonment. What applies to the lawless private citizen should apply to irresponsible private industry.
- Above all, we must strive to develop what has been called an "ecological conscience" and a "land ethic." An ecological conscience means realizing that man's actions, by bulldozing, polluting or spraying, can have calamitous consequences for living creatures—including man himself.

An ecological conscience and a land ethic can be instilled only by mass education. Here we are deficient, from graduate schools to kindergarten. The old field naturalists, the explorers, the probers, the observers, the restless seekers of the history of the race, the Darwins, the Beebes, are gone. In their place is the modern scientist, the specialist for the most part, young, safe in his lab, with starched white coat, clipboard of data and government contract. Field naturalism is passé. It is for boy scouts, little old lady bird watchers and left-wing Quakers passing a Saturday afternoon. A so-called educated American now can depart from college, marry, raise children and be completely unaware of the natural world. He could not care less that the superhighway mav be a destroyer, because he has no interest in or knowledge of what it destroys. He has never been told or taught. The classical biology course in high school or college is disappearing. The student who takes biology learns all about DNA and the genetic code. As one concerned reader wrote to *Science* last fall, "I have two daughters who have taken high school biology. One, a linguist, had the 'old-fashioned' kind: general principles, plus anatomy, physiology and taxonomy of the plant and animal kingdoms. The other, who wanted to be a nurse, took the blue version of the Biological Sciences Curriculum Study. She learned molecular biology and very little else. The first girl, who got a C in the course, knows much more about the world around her than the second, who got an A and doesn't know the difference between grass and moss, or beetles and crickets, or even plants and animals, although she is well versed in DNA. . . .

"Which of my daughters will find her high school biology course more useful in later life?. . . My daughters are much more likely to encounter frogs and trees and be concerned with the physiological systems of the body, than with DNA in their everyday lives. . . .

"And for the future housewife, or engineer, or shoe clerk, which is apt to be more useful: an understanding of the Krebs cycle or knowledge that maggots in the garbage will turn into flies?"

Scientists themselves have much to answer for in the despoliation of the environment. With the exception of a couple of dozen at best, they have refrained from participating in important public issues in which they have expertise. Too many scientists just don't want to get involved. They prefer to sit silently on the sidelines, as though spectators, watching justifiably concerned citizens trade volleys with utility company executives, highway engineers and other wreckers of the environment. There are signs that this attitude is changing—somewhat. Last year's annual meeting of the American Association for the Advancement of Science had as its theme, "How Man Has Changed the Planet." An editorial in *Science* commented later that unease "permeated the meeting."

The clergy, too, stands indicted for silence. One historian, Lynn T. White Jr. of UCLA, told the AAAS meeting that there is a "Christian arrogance toward nature." Many clergymen seem to have the attitude that what is destroyed on this planet is of little consequence since this world is "the vale of tears" through which we all must pass before moving on to the hereafter.

Without the scientists, without the clergymen, without the responsible politician, without the educated speaking up and taking action, abuse of America will continue. We have the power to stop it, and the reason and the logic of past events dictate that we should. Yet as Admiral Hyman Rickover says, "The only voices raised in protest are of those who are personally hurt, and of a small minority of citizens who cannot sit idly by watching God's own country turned into 'God's own junkyard.' Until this minority becomes a majority, the destruction will not cease."

Publisher's note: shortly after publication of this article, Congressman Charles E. Bennett of Florida quoted it in introducing his proposed conservation amendment to the U.S. Constitution. Bennett's amendment was referred to the Judicial Committee of the House of Representatives.

Also of interest to conservationists: among other advocates of the subject, The New York Times noted in a New Year's editorial that "scientists, of course, are not the only ones disturbed by these problems [of environmental damage]. Sports Illustrated, for example, devoted much of a recent issue to an incisive examination of the pillaging of the environment and its consequences. The magazine concluded—and we emphatically agree — that the engineer's tyranny over the environment must be ended."

During this same period, our readers' reactions — from concerned citizen and specialist alike—have reflected both insight and concern. Their feelings about the pillage of America are perhaps best summed up by one reader who said, "Finally I have read some ideas on what to do, not simply what to complain about."

CHAIRMAN KLASHMAN: Who has it--Mr. Farlow?

MR. FARLOW: Yes, I have it.

MR. PIRONE: Is that enough for you?

CHAIRMAN KLASHMAN: Yes. Thank you very much.

I would like to call on Mr. Ben Karmatz, Raritan Valley Clean Waters Association.

MR. KARMATZ: I want to thank you, Mr. Klashman, for allowing me to condense and add to my particular talk the one of Robert Merrill who suddenly became ill and had to leave Wednesday. Therefore I condensed the two talks that we have into practically one. I may take a couple of minutes more than my allotted time, but I think what I have to say is important and should be heard.

In order to clean up the estuaries in New Jersey, we must have clear water flowing in the estuary from clean stream rivers and waterways.

The 6000 members from 70 civic organizations and sportsmen's clubs and the Raritan Valley Clean Water Association send their recommendations and facts for your consideration.

Mr. John Clark, Director of Sandy Hook Marine Laboratories, said "Critical decisions must be made whenever progress conflicts with conservation of natural resources. The answer must be in favor of resources where personal greed is the motive for a disruptive project."

"It is water pollution, not water pollution control, that is threatening the future progress and prosperity of the nation," said Mr. Joe Moore, Jr., Federal Water Pollution Control Commissioner.

Since the passage of the 1965 Water Pollution Control Act, our organizations have been hammering away at the lack of enforcement against the worsening menace of water pollution.

Report after report on water pollution has been forwarded to the proper local and state agencies. The discharges of illegal pollution have been degrading the Raritan Bay Estuary for years.

There are industries and communities in Middlesex County who are, and continue to be, the major cause of pollution in the Raritan Estuary.

Token legal proceedings and ineffective directives taken by the N. J. Board of Health have not produced results.

On June 14, 1967, we cooperated with the N. J. Department of Health and named more than 20 polluters of the Raritan River and Raritan Bay area. The list was sent to Mr. Anthony Ricigliano, principal Public Health Engineer, at his personal request; yet to this day we have not received replies to our letters asking for the results of actions by the State Department of Health. What is he hiding?

Here is a list of some of the industries who are profiting by the inexpensive means of dumping their poisonous wastes and effluents into the waterways flowing into the Raritan Bay Estuary:

Bird Roofing Company of Perth Amboy with its hidden pipes discharging into spa springs flowing into Raritan River.

Heyden Chemical continues to pollute the Raritan River.

Allen Industries at Suckers Brook.

Republic Wire at Woodbridge Creek.

Shell Oil Company in Woodbridge discharges residual oil wastes almost continuously through two open ditches on each side of State Street at Sewaren.

Chevron Oil of Woodbridge, Advance Solvents of New Brunswick, Bond

Trucking Company, as well as Hatco, continue to discharge effluents into the Raritan River. Such industries are reducing the dollar value of the lands adjacent to the estuarine waters.

The so-called "Sanitary Landfills" which are in reality common dumps, violate the Landfill laws almost continuously by allowing excessive dumping of chemical liquids and acids which cause waste to flow into the Raritan River. They do it without hindrance.

In this category are some of the worst offenders, such as the Nixon Baldwin dump adjacent to the Raritan Arsenal. The Edison dump; The Elizabeth Dump at Keasby where McCormick Trucking bypasses court orders and purges its tank trucks as do other trucking companies.

How can the waterways be enhanced and the ecology of the area be preserved under such conditions?

Morgan Beach, Cliffwood Beach and Lawrence Harbor Beach are polluted and closed. Does this add to the recreational value of the estuaries? Here is a prime instance where state agencies lend themselves to the loss of aesthetic values by the reduction of recreational land.

Cheesequake Park is a state owned park. Cheesequake Creek is in the State Park. Cheesequake Creek waters flow through Lawrence Harbor and add to the contamination of its beach.

Nappi Trucking Company in Matawan has been polluting Cheesequake Creek since 1959, as shown by Conservation Officer Engel's complaint. Another complaint was recorded in 1960. In 1964 two conservation officers complained to Superintendent of Cheesequake Creek that effluent from Nappi was devastating the trees and shrubs in the nearby nature study area. Although Officer Schneider had moved to another area, he was ready and willing to come to New Jersey to testify. There are letters to that effect in the file of the Raritan Valley Clean Water Ass'n. The Department of Conservation stated his testimony was needed, but could not spare the $300 expense to bring him to Trenton.

The Department of Conservation did not disclose that fines up to $5,000 for years of pollution, or even $500, would offset Officer Schneider's travel expense. Three witnesses and photographs are still available in evidence on record up to date.

The efforts of the Raritan Valley Clean Water Ass'n. and other civic minded groups are made in the hope of upgrading the waters of the Raritan River and estuary. We are sure that the enhancement of the river would upgrade the dollar and recreational value of the entire Raritan Valley.

Its members were angered and dismayed when Commissioner Robert Roe of the Department of Conservation spent huge sums of money to establish an aluminum reduction plant at Sayreville and South Amboy. Such a plant would pollute and desecrate both air and water, as well as destroy countless acres of wetlands, aiding in the destruction of the natural ecology of the Raritan River and Bay.

Director of Middlesex County's Board of Freeholders, Mr. George Otlowski, as well as disenchanted conservationists and civic groups, protested the attempt to foist a land-killing and nature-destroying industry on the region. Commissioner Roe wears two hats.

Our coastal and tidal waters are our most precious possessions. Do we have the support of the State agencies to enhance them?

Middlesex County has spent two and a half million dollars for its green acre program only to have an open sewer called the Raritan River and

Raritan Bay flowing down into the ocean.

The Middlesex County Sewerage Authority cost $30 million to build. Municipalities and a few industries have moved voluntarily on their own to build and operate a trunk sewerage system, only to see the benefit from the operation negated in a large part by the illegal action of those who pour pollution into what would otherwise now be a clean river system. The dedicated workers of the Middlesex County Sewerage Authority operate a sewerage disposal unit, not a pollution enforcement agency.

Failure of the State Department of Health to prevent pollution by vigorous action has resulted in a gigantic sewer called the Raritan River which pollutes and destroys the Raritan estuarine environment.

Local officials of Perth Amboy have footballed the pollution problem for years. Perth Amboy Beach is only a few hundred yards from the swirling overflow of its sewerage. That can be seen at high and low tide.

Mayor Flynn of Perth Amboy asked the Freeholders of Middlesex County for assistance in alleviating the air and pollution problem. One wonders how sincere he can be as the following incident will illustrate.

A service club in Perth Amboy put a pollution display in a store window, designed to arouse the citizens for action against polluters. The display was hurriedly removed by order of the Mayor's office.

Can we expect such local officials to aid in the battle to enhance and upgrade the quality of water in our estuaries?

The records of the Middlesex County Sewerage Authority show report after report of pollution by industry and by communities that were made to the State Department of Health; however very little meaningful action resulted.

Let us look at the June 14, 1967 Summary Report of the third session of the conference on pollution of Raritan Bay and adjacent waters on pages 19 and 20. Note the compliance dates -- all 2, 3 or 4 years overdue. Note the last sentence, "To date, these orders have not met with compliance." Questionable leadership by local and state agencies have failed to halt the pollution and defiling of our waterways and estuaries. Pollution enforcement is a sham.

The governor and the state legislature play political football with funds for pollution enforcement and abatement, then allocate money that is too little and too late.

To answer your question, what system of management will best provide for development and protection of our estuarine resources?

We have shown only a small part of incidents of government-permitted illegal pollution. We have tried to show that large industries save money by polluting our estuarine resources. Operators of dumps profit by the ineffectual supervision of local officials.

President Johnson, in signing the 1965 Water Pollution Control Act, Public Law 660, said, "No one has a right to use America's rivers and America's waterways that belong to all the people, as a sewer." He continued, "There is no excuse for chemical companies and refineries using our major rivers as pipelines for toxic waste. There is no reason for communities to use the people's rivers as a dump for raw sewerage."

In answer to your question, "What system of management will provide the best protection of our estuarine resources," and speaking for the members of the Raritan Valley Clean Water Ass'n. and its allied groups, our reply is based on Public Law 660, Section 10, Page 13, Pollution Control Act of 1965. We feel the Federal Government must take over the policing of pollution for the protection and conservation of our estuarine resources.

Thank you.

Would you like to cross-examine me?

(Applause.)

CHAIRMAN KLASHMAN: Thank you very much, Mr. Karmatz. Are there any questions?

(No response.)

Thank you very much.

A VOICE: I will send you a report later.

CHAIRMAN KLASHMAN: I assume that your report is not at length.

A VOICE: No, it won't be at length.

CHAIRMAN KLASHMAN: I can assure you it will be included in the record. I want to thank all of you for meeting with us and helping us in this very difficult task.

The meeting is adjourned.

(Whereupon, at 5:30 P.M. the meeting was adjourned.)

PART II

WRITTEN STATEMENTS

LEAGUE OF WOMEN VOTERS
OF BRICK TOWNSHIP, N. J. 08723

I am Mrs. Wilfred Armitage, first vice president of the League of Women Voters of Brick Township, Ocean County, New Jersey, and Chairman of its Water Resources Committee.

My assistant is Mrs. Paul Newman of Brick Township and a member of my committee.

My map is of the upper or northern portion of Barnegat Bay, south to Toms River, Ocean County, New Jersey. It shows the waterways of Brick Township which flow into the northern portions of the Bay. ~~The location is~~

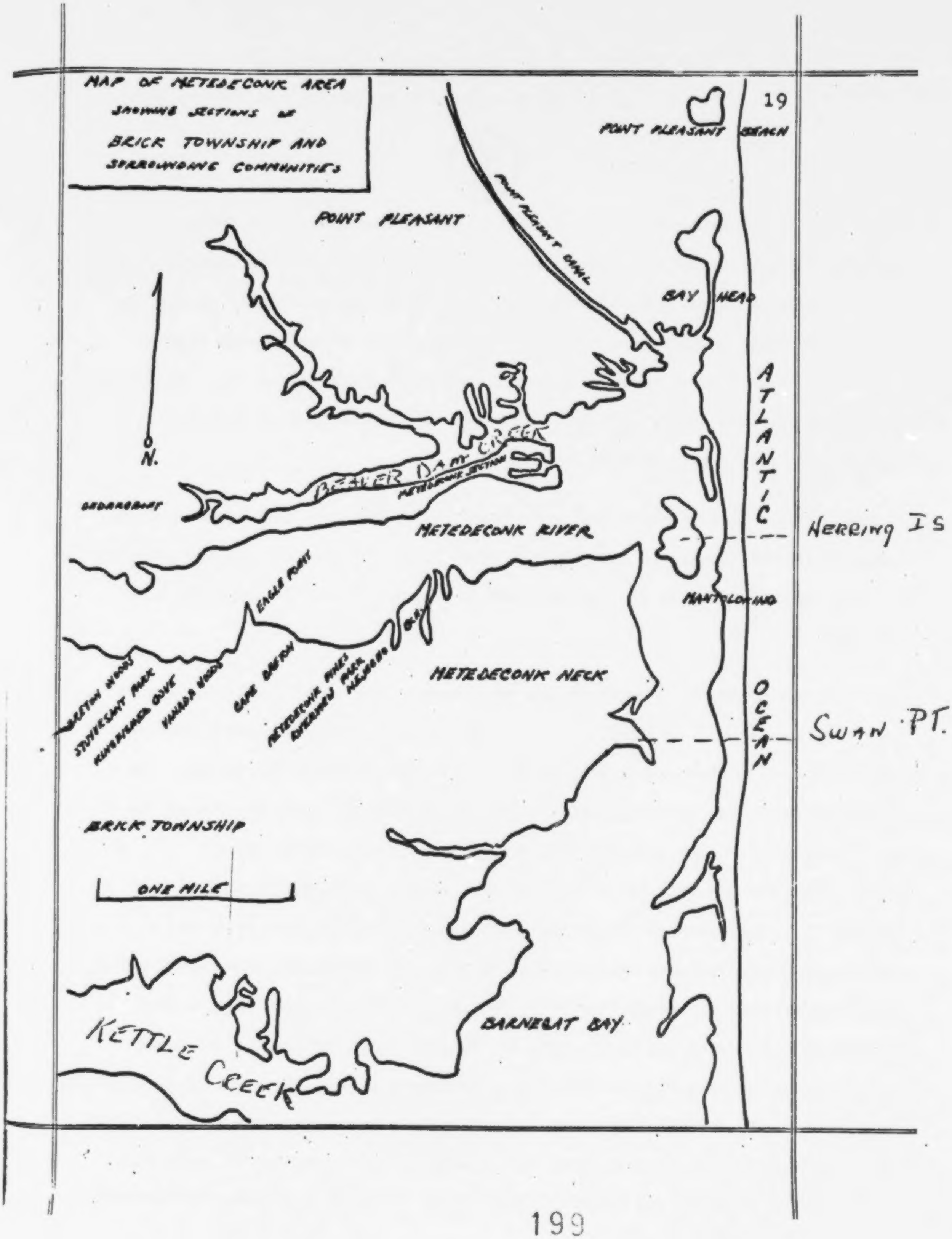
Brick Township covers 27 sq miles and is 1/3 Developed.

Brick Township borders Barnegat Bay on the west. These waterways, Beaver Dam Creek, the Metedeconk River and Kettle Creek, flow into the bay.

Population
27,000 yr Round
increases to
over 50,000 in
Summer Season

Eleanor K. Armitage
(Mrs Wilfred Armitage)
Water Resources Chr.
733 Bay Ave Brick Town, N.J.

Bel Johnson (Mrs. Harold)
President


MAP OF METEDECONK AREA
SHOWING SECTIONS OF
BRICK TOWNSHIP AND
SURROUNDING COMMUNITIES
19
POINT PLEASANT BEACH
POINT PLEASANT
POINT PLEASANT CANAL
BAY HEAD
N.
BEAVER DAM CREEK
METEDECONK SECTION
CEDARCROFT
METEDECONK RIVER
ATLANTIC
Herring IS
MANTOLOKING
EAGLE POINT
METEDECONK NECK
BRETON WOODS
STUYVESANT PARK
VANADA WOODS
CAPE BRETON
METEDECONK PINES
PARK
OCEAN
SWAN PT.
BRKK TOWNSHIP
ONE MILE
KETTLE CREEK
BARNEGAT BAY

LEAGUE OF WOMEN VOTERS
OF BRICK TOWNSHIP, N. J. 08723

Under the Federal Water Quality Act of 1965, the waterways of Brick Township and Barnegat Bay were graded for recreational purposes. The people who live here and vacation here do so for the recreational aspects of the area. Water recreation is our only large industry and our greatest asset. Our entire economy depends upon it. The loss of these waterways to pollution would result in a tremendous drop in real estate values, as well as a great loss to business in serving the needs of the people attracted to the area.

I recently went ~~to~~ on a "go-see" boat trip sponsored by the Tri-State L.W.V. and the FWPCA to see the ravages of industry and population upon the metropolitan waterways. It would be a disgrace to see the beautiful Barnegat Bay Area destroyed in like fashion.

The waterways of Brick Township at present receive very little pollution from manufacturing industry. Our pollution is of a municipal nature, shopping centers and residential - also boats privately owned, docked and afloat in the waters. We have only one sewage treatment plant which services a very small portion of the municipality. The vast majority of the township has Septic tanks. It appears that the possibility of sewerage facilities for the entire municipality is remote. A recent letter addressed to US Senator Clifford Case from Col. R. L. Seidel, Corps of Engineers and assistant director of Civil Works reads and I quote... "See enclosed copy of letter "The N. J. Division of Fish and Game reports that the Metedeconk River is at the upper limit of its capacity to assimilate pollutants from such sources as effluents from se~~p~~wage treatment plants, seepages and percolations from septic tanks, runoff from farmlands and organic discharge waste from watercraft. More than 21,000 acres of water have been closed to the harvesting of shell fish because of the existing and potential pollution". Unquote.....Still, developement

LEAGUE OF WOMEN VOTERS
OF BRICK TOWNSHIP, N. J. 08723

goes on unabated, including a recently passed federal approved 13 story - 120 unit Sr. Citizen Housing Developement with Septic tank facilities for sewage disposal. Lagoons continue to be constructed on both sides of Barnegat Bay for the purpose of building small plot homes which have septic tanks often flooded and over flowing when the water table is high. As the water table recedes the septic tanks' effluent also enters these lagoon waters adding to their pollution.

In recent years there have been a number of fish kills in the Metedeconk River and there is a steady decrease in the number of crabs. The abnormally large aquatic growth in the River and the Bay is only held in check by hand harvesting at the shoreline, which is an ever increasing expense to the local, county and state governments. At the present time the Philadelphia Division of the Corps of Army Engineers is conducting a study to determine the source of this plague and a possible solution to the problem.

During this past month 12 beaches in Brick Township have been declared unfit for swimming due to the high coliform count. Several of these beaches had a coliform count of 7000+ (See newspaper item.) Contradicting reports were issued to the public and further bulletins regarding the water conditions were not made "public" through the news media - a flagrant disservice~~s~~ to the people of the community.

In order to help preserve the recreational environment of north Barnegat Bay the few remaining coastal marshes are desperately needed, not only as habitat and storage places of food for fish and other wild life but as as buffers for flood waters during the hurricane season and other sea storms. The marshes are also needed to dilute, breakdown and disperse nutrients, pollutants andpoisons washing into them which would otherwise destroy the estuaries. The developement of these marshlands also means the loss of the fresh water table resulting in theintrusion of salt water. There is no local plan for land wildlife reservations in Brick Township.

The portion of land called Swan Point has been acquired by the N. J. Green Acres Program and an effort is being made to have the Green Acres Program acquire Herring Island at the mouth of the Metedeconk River. N. J. also has a State Park at Island Beach between Barnegat Bay and the ocean. The "Strip Area" north of Island State Park and between Barnegat Bay and the Atlantic Ocean is almost completely developed with lagoons and residential and commercial developements.

It appears that the developement of Brick Township is dominated by self-serving land owners and builders with little regard for the future of the area as to recreation. Because water recreation is ouronly large industry and the economy of the area depends upon it, we would like to secure the help of the Federal Government in determining sources and controls of pollution since thelocal, county and state governments are obviously unable or unwilling to do the job.

As to the future of the estuaries in our area, let us be mindful of the projected population boom in N. J. and the whole eastern seaboard which in thirty years promises to produce a megolopolis from Boston to Washington. As a result of automation one of the biggest problems facing our country will be Leisure Time. It is a duty and a responsibility to future citizens that some areas along the Atlantic Seaboard be preserved for all recreational purposes.

LEAGUE OF WOMEN VOTERS

OF BRICK TOWNSHIP, N. J. 08723

COPY

ENGCW-PV 13 December 1967

Honorable Clifford P. Case
United States Senate
Washington, D. C. 20510

Dear Senator Case:

This is in further reply to your letter concerning the aquatic plant control study for Metedeconk River, Ocean County, New Jersey, about which Mr. Alfred L. Brogan, President of Ocean-Bay-River Associations, Brick Town, New Jersey recently wrote to you.

A preliminary reconnaissance survey on the aquatic plant problems in the North Atlantic States including detailed analysis of the Metedeconk River has been made by the Philadelphia District of the Corps of Engineers. The survey is the first step toward determining the nature of the problem, obtaining such information as is presently available on the conditions that exist which will throw further light upon what is involved in creating the problem and the feasibility of improving the situation.

The weed problem in this area arises primarily from a build-up of widgeon-grass and eelgrass and secondary occurrence of such plants as sea lettuce, marine algae and undetermined species of phytoplankton. The problem becomes more acute as offshore plants are dislodged by storms and heavy boat traffic and floating debris is moved by prevailing winds onto beaches and shore line properties.

The offensiveness of decomposing vegetation along the shoreline is augmented by pollution in the water. Generally, the aquatic plant nuisance is aggravated by the plant nutrients that are introduced into rivers and other bodies of water by the activities of man.

Physical removal of plants from bodies of water by harvesting or controlling the growth with herbicides are considered to be only temporary measures. The New Jersey Division of Fish and Game reports that the Metedeconk River is at the upper limit of its capacity to assimilate pollutants from such sources as effluents from sewage treatment plants, seepages and percolations from septic tanks, runoff from farm lands, and organic discharge wastes from watercraft. More than 21,000 acres of water have been closed to the harvesting of shellfish because of existing and potential pollution.

LEAGUE OF WOMEN VOTERS
OF BRICK TOWNSHIP, N. J. 08723

ENGCW-IV
Honorable Clifford P. Case

The role weed control may play in improving the situation and how this may be accomplished is unclear at the present time. Methods for controlling these weeds have not been established at a satisfactory level for control operations and experimentation on possible control procedures involving use of conventional herbicides will require participation and concurrence of other Federal, State and local authorities. These plants are important sources of food for waterfowl and control in their natural sites would involved interests of the Fish and Wildlife Departments. Control operations would also require payment of 30 percent of the costs by local interests, which also remains to be worked out. Although it has not been determined that weed control operations are feasible at this time since this is a pollution problem, we shall continue to work with the other interests concerned in a joint endeavor to find solutions to the above problems and, if possible, to develop a practicable plan for weed control in the Metedeconk River.

Sincerely yours,

R. L. SEIDEL
Colonel, Corps of Engineers
Assistant Director of Civil Works
for Atlantic Divisions

Incl: Ltr to Sen Case
fm Mr. Brogan, 3 Nov 67

'Unsafe' Signs Are Ordered At 7 Beaches

BRICK TOWNSHIP — The Board of Health last night ordered signs posted at seven municipal beaches warning residents that swimming in those areas is not safe.

Bacteriological testings were made by Ocean County Medical Laboratories, Rte. 88, on July 2.

The report said, "Testings indicate the coliform (bacteria count) remained relatively the same, rendering the bathing areas as unsafe for bathing in accordance with the standards as presceibed by the N.J. State Health Department."

If the bacteria count is 2,400 or above it is considered unsafe for bathers.

Tests showed Cherry Quay had a count of 7,000; Eagle Point, 7,000; Vanada Woods, 3,000; Cedar Wood Park, 3,000; Cedar Bridge Park, 7,000; Johns Beach, 2,400; Windward Beach, 2,400; Metedeconk Beach, 2,400; Lake Riviera, 7,000; Mallard Point, 2,400; and Forge Pond Rd., Rte. 70, 7,000.

Councilman Ronald Jones said, "The count can be misleading. We have been informed by the laboratories that the heavy rains we have been experiencing could have a bearing on the present count."

Another complete survey was made today. The results will be made public tomorrow.

In other action the board elected Councilman Charles Gaskill chairman for the coming year. Councilman Walter McGee was elected vice-chairman; Eugene Serpentelli was reappointed attorney, and Robert Powers was reappointed engineer.

The board authorized the purchase of testing equipment to test the effluent of township sewerage plants and waterways.

"At present it costs $12 for every test made. Future tests can be made daily by our plumbing inspector at no additional cost to the township," said Mr. Gaskill.

The cost of the testing unit is $250.

Asbury Park Press

July 8,1968

July 11,1968

Beach Problem Is Studied

a.p.p. July 11, 1968

BRICK TOWNSHIP — Health authorities here are trying to find how 12 bathing areas suddenly became unsafe.

Walter McGee, vice-chairman of the Board of Health said, "we are trying to find the source of the increased contamination. It does not seem logical that the coliform (bacteria) count should increase so rapidly."

"We have been aware of the problem we are having with the inland waterways, but this is the first time the count has jumped up the way it has. Usually there is a gradual increase during the summer months."

Board of Health officials have ordered bacteria tests made in several areas of the Metedeconk River.

Signs were posted at seven municipal beaches advising residents the water was unsafe for swimming. Four other beaches are considered unsafe as the bacteria count is high. That's the maximum safety margin set by the state Department of Health.

When the signs were posted many mothers protested about having to take their children out of the water, Mr. McGee said.

"The Board of Health is looking out for the welfare of township residents. We are not telling them they cannot use the beaches. The water is not polluted. We are only advising them that the water is not considered safe," he concluded.

Hospital authorities said, when the bacteria count rises above the 2,400 mark, cases of intestinal infections, pink eye, and nose, ear and throat infections are known to increase.

New samples of the water were tested yesterday, and the results will be made public Friday.

July 16.1968

Brick Health Unit Denies Pollution

July 16, 1968 APP

BRICK TOWNSHIP — When are polluted waters not polluted? When they're "substandard" or "only temporarily polluted by heavy rains" or, especially, when they're in your town.

Those were some of the reactions last night by members of the Board of Health as they fretted at data indicating the water at several beaches on the Metedconk River is polluted.

The health board, made up of Township Council members, drew little comfort from the view offered by one that "there is nothing new in this. We had the same problem last year and the year before that."

Several beaches have been posted with signs reading: warning, swimming not advisable at this location.

The board agreed to continue to take tests and continue to post signs. But they said no one will be actually prohibited from swimming in water rated as polluted. Private beaches regardless of rating will not be ordered closed.

Raymond A. Biernacki, owner of the Ocean County Medical Laboratories, Rte. 88, reported to the board that water is considered dangerous for swimming where there are more than 2,400 coliform bacteria for 100 milleliters of water. Several beaches have produced recent readings of 7,000. Readings are not made over 7,000, he said.

While in earlier reports he had expressed concern at possible pollution from sewage disposal plants, he reported last night, "a survey July 12 indicates all existing sewage disposal plants are operating efficiently and are not at this time contributing to our existing problem."

In his report, Mr. Biernacki said that unfortunately, the Asbury Park Press had publicized the situation. This he said resulted in sewage plant operators being alerted and correcting conditions at their plants before he could check them.

WARNINGS POSTED - Signs have been placed at various bathing areas in Brick Township, including Vanada Beach and Lake Riviera Beach as shown above, by the Board of Health, to let swimmers know that the board is testing the waters and has found a high Coliform bacteria count. The board feels that these waters are not polluted as the public thinks of pollution, but according to Charles Gaskill, chairman of the Board, the public should be kept aware of water conditions and changes.

Waters Are Not 'Polluted' According To Gaskill

← Local Brick Town paper

"The Observe,"

BRICK TOWNSHIP— A meeting was called by the Board of Health here Monday evening to publically announce water conditions at the local bathing areas

The board, in conjunction with Ray Bernacki of Ocean County Medical Labs, have been conducting tests of the water to determine bacterial count, for the past two weeks.

According to Charles Gaskill chairman of the local Board of Health, there is no pollution as the public generally thinks of water pollution. "There is only a high bacterial count. There has been no harm to marine life as far as we know," stated Gaskill.

When asked if the Coliform bacteria could be dangerous to swimmers he stated, "The bacteria might possibly cause a sore ear or similar minor infection if the person has prolonged contact with the water. Someone might get sick if they swallowed enough of it. But it is not seriously dangerous.

In reference to the signs posted at Cherry Quay Beach, Eagle Point, Vanada Beach, Cedarwood Park, Cedar Bridge Manor, Lake Riveria, Forge Pond Road at Route 70 and Mallard Point Gaskill stated, "These signs do not say that the areas are polluted. They simply say that we are testing the waters to determine suitability for bathing."

Gaskill went on to say, "There is really not much difference in the water condition at this time of season than there was ten years ago. It's just that this Board feels that it is our duty to make the public aware of the bacteria.

He also states that they are checking sources coming into the area and are making continuous tests some that have never been made before. "The bacteria counts that we are recording now might simply be caused by the churning up of the waters due to boat activity," stated Gaskill.

"The public will be kept abreast of new counts and changes in the water and the Board will continue to test and post signs where needed," he concluded.

JULY: 18, 1968.

To date the only news release in Brick Township paper — 10 days after out of town paper release.

Asbury Park Press 7/22/68

← NOTE EDITORIAL ASBURY PARK PRESS July 22, 1968.

Metedeconk Pollution

Four more beaches on the Metedeconk River have been declared unsafe for bathing. Thus nine riverfront bathing areas now are off limits at a time when all available bathing areas should be safe enough to provide relief from summer's heat.

The pollution of the Metedeconk poses a grave problem for Brick Township. Other communities operate sewer plants that discharge into waters that finally reach the river. Rapid development of the township itself has undoubtedly been a contributing cause. Only the most stringent enforcement of basic health rules and vigorous action in support of sanitary sewer systems through the entire Metedeconk watershed can restore this great natural asset and offset the economic losses that pollution imposes.

Brick is not alone in facing this dilemma. Throughout the length of the New Jersey coast, inland waters from Sandy Hook to Cape May are endangered. To the credit of those responsible for public health no serious outbreak of disease has occurred but there is no assurance that fouled waters will always be detected in time to warn against public use.

The huge cost of reclaiming these once clean waters must be met because it is far less than the price of apathy in the face of rising bacteria counts.

REPORT OF THE COMMITTEE APPOINTED BY THE BOROUGH PRESIDENT OF MANHATTAN ON ALTERNATE SITES FOR THE PROPOSED NORTH RIVER WATER POLLUTION CONTROL PLANT

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HISTORY

The Department of Public Works of the City of New York has proposed that a sewage treatment plant titled the North River Water Pollution Control Plant, which would serve all of the western side of Manhattan Island be placed on a site at 143rd Street on the Hudson River. At a public hearing held by the New York City Board of Estimate on April 4, 1968 opposition was heard from some of the residents of the site where the sewage plant was proposed to be located. Testimony was also taken from Local 147 of the AFL-CIO commonly known as the Sandhogs union asking that work be provided immediately for its members.

As a result of the public discussion the Board of Estimate on that date voted to continue the hearing until April 25, 1968. The Board asked Manhattan Borough President Percy Sutton to set up a committee whose membership represented the important interests concerned with the sewage plant: community, labor, and government and enpower them to investigate alternate sites with consulting engineers provided by the city.

Miss Lena Payne of the Riverview Towers Board of Directors and Mr. Edward F. Taylor of the Architects Renewal Committee in Harlem were selected to represent the community and Mr. Richard Fitszimmons was selected to represent Local 147, AFL-CIO. Mr. Frank Baraff of the Borough Presidents office was designated to be M. Percy Sutton's representative on the committee.

The Alternate Site Study as written by Msars. Hazen and Sawyer, Consulting Engineers of 360 Lexington Ave. NYC for the NYC Department of Public Works was read by all and a meeting was set up with Mr. Hazen and Mr Walters of his staff, where the Inwood, Dyckman, 143rd, 72nd, 66th, and 59th Street Sites were visited.

Existing city sewage plants and plants in contiguous areas were visited. These included: the Owls Head Sewage Treatment Plant, the Coney Island plant, the Town of Mamroneck plant, and the Yonkers plant. The committee was not able to tour the Yonkers plant. At the others tours were made, equipment inspected, and local residents interviewed. Assisting in the inspection were the ChiefDesigner for Intercepting Sewers,Mr.Smith, and the Assistant to the Chief of Plant Operations, Mr. Wagner - both of the Department of Public Works.

On Tuesday, April 23, a conferance was held with Mr. Eugene Hult, Commissioner of Public Works of the City of New York. A letter was also sent to the N.Y.State Department of Health c/o Mr. Norman Nosenchuck.

The results of this survey are as listed below:

April 24, 1968

I consented to be on this committee to study Alternate Sites for the North River Pollution Plant because I thought that I could contribute something to the discussions of the committee. I represent the Architects Renewal Committee in Harlem, a group of Black Professional Architects and City Planners involved in advocate planning in the Harlem Community. I am serving for a year as a VISTA Volunteer and was assigned to this organization. I have a Master's Degree in Electrical Engineering from Rensselaer Polytechnic Institute, Troy New York. I have had some minimal training at Rensselaer and at Cooper Union in the basics of structural design and am able to understand reports on the plant design reasonably well.

As a first step in understanding the problems posed by a sewage plant four existing plants in the area were inspected as to their effects on the surrounding communities.

At the Owls Head Sewage Plant there was a noticeable odor but only within 15 feet of the exaust vent and within 50 feet of the ground level doors. It was a sunny spring day, a good breeze was blowing and whatever smell there was was dissepated by the wind. However whild we were there only one of the seven aerators used to purify the sewage and which contribute to most of the smell was in operation. The others were shut down, according to Mr. Wagner because there was no need for them during the winter. In the summer when they are operating the smell would definately have to be worse.

A second observation was that all equipment in the plant seemed to be very corroded due to the high humidity inside the plant. Thus any esthetic devices used to beautify the plant would have to be very carefully planned to withstand the corroding influence of the plant atmosphere.

At the Coney Island plant site there was a definite noticeable odor up to three hundred feet from the plant. At least two of their aerators were shut down for the winter so that the maximum affect could not be seen. Also for some reason the ozone apparatus had broken down and was not used.

A family living about three hundred feet away from the western side ofthe plant stated that in the past the smell from the plant was so bad that they could not sleep nights. The worst time for plant smell was at night and on some weekends. They had written many letters of complaint to the city and had many promises made correcting the complaints. They did say that a year ago the city made repairs on the plant that made the smell somewhat bearable while before it was intolerable. Mr. Wagner stated that about a year ago powerful blowers like those proposed to be installed at North River were installed to blow waste gases high into the atmosphere allowing them to disperse more easily. The family interviewed also complained about the smell of the "perfume" used to deodorize the plant during cleanup, saying that it was worse than the smell of the sewage.

Children playing in the ballfield adjacent to the plant stated that at times the odor from the plant was very bad. Half of the children who lived in an apartment building nearly five hundred feet from the plant site said they could smell the plant from their apartments at times. The other half said they could not . This was explained to be because they lived in apartments with windows facing away from the plant.

The Mamroneck Sewage Disposal Plant which we toured was very small, only 10 million gallons per day versus 150 mgd for Owls Head, 110 mgd for Coney Island and 220 mgd for North River. However it was the most modern of the plants surveyed. A garden was planted upon the top of the plant and the equipment inside was newly painted but in very good repair. Ozone was used to scrub waste gases and was effective in eliminating most of the smell. Chlorine gas was also available to treat sewage in the summer. A very thorough sewage treatment process was used, more than that planned for the North River Plant. Finally the sewage residue was pumped two miles out to sea before being expelled into the water. The plant was not only able to handle normal load but was able to offer treatment to any normal storm water runoff that might be encountered. This is not contemplated at North River. Were the quality of sewage control shown at Mamroneck duplicated at North River I am sure North River would cost twice as much as it does now. In conclusion this plant should not be compared with North River because of the twenty -to-one discreprancy in sizes.

No conclusions could be drawn from the Yonkers site.

It was brought out by the chief engineer for intercepting sewers,Mr. Smith, that contracts for the Northern and Southern ends of the tunnels would be ready for bidding in May and changes in the plant site would NOT materially affect these designs. However a change in plant site WOULD affect the contract upon which the Board of Estimate is now voting. A letter was sent to the Deputy Commissioner of the State Department of Health through Mr. Norman Nosenchuck, his assistant and a reply is now awaited. A copy is appended to this report.

Of the alternate sites studied by the report the sites at 59th or 66th Streets would seem to be optimum from the standpoint of efficiency, plant cost, and community impact. The area is now owned by the Penn Central Railroad who have many rotting piers standing idle.

Private inquieries by the Department of Public Works and Hazen and Sawyer have shown that the Penn Central Railroad is not averse to the site being used for the sewage plant if suitable access routes are planned so as not to intefere with operations at the siding. Indeed Penn Central has the go-ahead for Pan American Airways to study the feasability of placing a STOL-port off 64th Street.

Pan American had also been contacted by Hazen and Sawyer and were not averse to coordinating their STOL-port plans with those of the plant design. The foundations would be essentially the same for both projects and the roof of the plant could either support the STOL-port runway or an adjacent plane or car parking lot which would coordinate with the port. Even disregarding the STOL port idea, the roof of the sewage plant could be used effectively as a paying proposition by placing a parking garage on it. Factory and office space are very crowded near this site and everyone knows that many more parking garages are needed in this part of Manhattan.

The area of course is totally industrial. The only residence- nearby are on Eleventh Avenue nearly 1400 feet from the site. Thus no resident opposition need be expected and the commercial landlord in the area, Penn Central, has already expressed some interest. Plans by the City Planning Commission for the area are still very fluid and I am sure this plant could be included.

At all other sites (except Inwood) considerable community opposition could be expected. At Inwood opposition from conservationists could be expected. Also plant costs jump enourmously as the site is moved further North. Thus these sites I would consider as not very good alternatives to the present site.

It has been said that the city will lose Federal and State money if construction is delayed. I see no reason that the construction need be delayed more than two years at the most due to the fact that in the plant proper only the caissons supporting it need to be redesigned, and of the intercepting sewers only the central portion need be redesigned. It will, of course be up to the city to push through authorization with all possible speed but I am sure that with the cooperation of the interests displaced by the plant this is a mere technicality. Labor and material costs will rise during the waiting period but it is also reasonable to expect that the Federal share of the costs will rise also as the government is pressured to give more than lip service to urban clean-up.

Therefore I must conclude that the most logical conclusion for this Board of Estimate to take is to do as much as it can to see that a solid, concrete feasability study be undertaken by the Department of Public Works on the 59th or 66th Street sites and bearing unforseen complications all plans be changed accordingly.

Yours truly
Edward F. Taylor III
Edward F. Taylor III
Architects Renewal Committee in Harlem

REPORT OF RICHARD FITZSIMMONS, SANDHOG UNION

I, Richard Fitzsimmons, Business Representative of Local No. 147, Sandhogs was the man from the Union picked to go along with the two members of the Community and Representatives from Hazen and Sawer, Engineers to inspect alternate plant sites. I have studied Hazen and Sawyer report and after talking with Mo Hazen and Mr. Dick Walters and agree with the report in general.

We visited Owls Head plant. There was a definite smell inside- slight smell 15 feet from the vents - no smell 20 feet from vents. As far as smell directly outside plant we were told by a Mr. Ed Wagner from Public Works, it was because two large steel doors were open.

We then visited Coney Island Plant and there was a smell on Knapp Street. I went out on Saturday and talked to the renting agent of Sea Crest Towers, Mr. Frank Galisanki, the address is 3080-3090 Voorhies Avenue. These apartments were built three years ago. Out of 315 apartments there are three vacancies. Rent when the apartment firs went up was $211 for five rooms. The renting agent said they are now trying to get rid of the tenant as they could get $290 a month now for the same apartment. I talked to a woman who lived approximately 200 feet from plant. She said there was a bad smell when she first moved there seven years ago. The City had taken measures to correct the smell but it could be better. I would like to stress that this plant is part closed and part open, whereas the plant in Owls Head is completely enclosed.

The Plant in Mamaroneck was a beautiful plant. We were told by Mr. Dick Walters of Hazen and Sawyer to be on the lookout for the plant as we approached in the car. Mr. Ed Taylor, Mrs. Lena Payne and myself passed the plant without even noticing it. In my personal opionion it was beautifully designed and landscaped. I see no reason why if Westchester County can beautify a small plant such as that, the City of New York cannot do so on a large scale.

s/ Richard Fitzsimmons
Sandhog Union

SEWAGE PLANT SITE AND PLANT INSPECTION

LENA PAYNE
Chairman
Sewage Committee
River View Towers

APRIL 24, 1968

It impressed us as singular that laymen, inexperienced in topography, building and engineering should have been asked to undertake the job of site selection and plant inspection which is so clearly the responsibility of the Site Selection Board and the Department of Public Works. We acceded to this request only because we did not wish to close our lines of communication by default on our part. That is, we did not want any public officials before whom we previously have appeared to tell us they had given us an opportunity to look for sites and inspect plants and we had refused.

We inspected sites on April 17th and looked at existing sewage plants on April 18th. The sewage plant survey will be covered in another section of this report. The results of the site inspection were as follows:

The Inwood and Dyckman sites, which could be well-disguised and unseen because of high cliffs over-hanging the shore line were not in immediate proximately to residential areas. However, there were people in the park area. It would be our opinion that a plant in these two areas would deny the area residents use of valuable park land which we understood is used fully, particularly during the summer months. In addition, Hazen and Sawyer, engineers, found the Dyckman area the least efficient site fo the sewage plant because of weak boring data and the most expensive to build.

The 143rd Street site, which is a ten block long primary and secondary treatment plant, the largest in the entire State of New York, is only 400 feet at the closest point from a densely populated residential area. Desperately needed park space will be denied the resident and the character of the entire community will be changed, down-graded and ultimately disintergrate into a slum -- a ghettoized area. Many people presently living here have made it very clear that they will not stay if a sewage plant is erected here. Many are professional people, doctors, lawyers, engineers, architects and technicians while many are professors in the City University system and Columbia University. Their loss will be an irreparable blow to this integrated community.

Surely, those who have been studying this problem know that the Hudson River at this point is closest to a residential area of any place along its meandering shore line. The plant is to be festooned with fountains and pools and general aesthetic accoutrements proposed by Mr. Philip Johnson at an additional cost of $12,000,000 to make it more palatable to the populace. The populace is not interested in these embellishments because they look upon them as an insult to their intelligence and an attempt on the part of the City to placate them for putting the plant here in the first place.

Hazen and Sawyer indicate in their 'Conclusions' on Page 13 of their report that "shifting the treatment plant from 143rd Street to 57th Street or 66th

Street and modifying the interceptor to suit might reduce the North River Pollution Control Project by $4,000,000 to $9,000,000." Add this to the $12,000,000 niceties suggested by Mr. Johnson and you have a saving of $21,000,000 which almost offsets the $25,000,000 that a three year delay for redesign would create. No one has fully explained why redesign should take three years.

57th Street and the Hudson River, the site recommended by Hazen and Sawyer, is 1100 feet from 11th Avenue. We have not had an opportunity to ascertain if 11th Avenue has any residents or is a commercial area. 57th Street and the River is an area of rotting piers, rotted pier up-right logs, unused loading platforms, New York Central freight trains and tracks, unused, dilipated storage buildings, a Consolidated building which is only partially used and a Marine Transfer Station. This is purely commercial area with not a house in sight. It has a tremendous truck traffic, mostly the large, cross-country variety. A plant at 57th Street would be the least expensive to build and, in all probability, at the very outset be more efficient than the 143rd Street plant which cannot hope for more than 66% efficiency at the best. Even that 66% is not guaranteed and will deteriorate rapidly in four or five years -- partially because of site limitations.

A most important aspect of the "57th Street site is that savings in sludge barging ranging from $15,000 to $100,000 per year would be equivalent to a reduction in initial expenditure of $200,000 to $1,500,000." It should be recognized that the sludge from 57th Street has to be barged a much shorter distance to the Atlantic than the sludge from 143rd Street site.

The 72nd Street site cannot be considered because it is now too small to do the job required.

In our conference with Commissioner Eugene Hult of the Department of Public Works, we were advised by the Commissioner that the City would lose $6,000,000 if it did not sign a contract on 4/26 to enable work to be started so that the sand hogs could begin working. Surely, we feel nothing but compassion and empathy for the sand hogs. However, if this contract is not signed and the City has to pay $6,000,000, as Commissioner Hult indicated, it will not be the first time or the last that this City spent sums of this size and larger on some project that did not materialize.

I wish to be permitted a personal observation. On December 15, 1967, I closed the final chapter on thirty-four proud years of tenure with the City of New York. My record is there for all to see -- thirty-four years of above average and outstanding performance. My many years of devoted service taught me that we should never lose sight of people. In these two and one half years that I have been involved in the sewage struggle, and with all the reports and engineering reports I have read, not once have I heard anyone talk about or write about people. One gets the strong impression that people in this City who are charged with the responsibility of working for the greater good for the greater number, are not people-oriented. In all discussions we have had the City authorities about this sewage plant, we strongly have gained the impression that everyone is proceeding with a great sense of urgency in order to qualify for State and Federal funds. This Federal and State deadline, which in all probability is more flexible than the City cares to admit, is causing our responsible officials to dash forward and start something, regardless where, and without regard for people in order to qualify for these funds.

Let me sum up. We are all agreed that the Hudson is polluted and must be cleaned and kept clean; it is mandated by law and socially desirable. However, regardless how badly it needs treatment and regardless of the happy prospect of State and Federal subsidy (Federal is questionable) this sewage plant should not be placed in ANY residential area, not just here, not just ours, but NO residential area. We smelled Owl's Head which was bad enough, but the stench which permeated the entire atmosphere at Coney Island on a clear, moderately cool, slightly windy day, should not be visited upon dumb animals let along human beings.

We strongly suggest and request that the 57th Street site be selected because it is not a residential area, it is a commercial area, it is a more efficient site and less expensive in the long run. The fact that it is not near a residential area will not cause an on-going community to become a slum.

s/LENA PAYNE
LENA PAYNE, Chairman
Community Relations Committee
River View Towers
Board of Directors

ADDENDUM I

April 22, 1968

Mr. Norman Nosenchuck
Assistant for Engineering Coordination
Construction Grants Activities
N.Y. State Department of Health
84 Holland Avenue
Albany, New York 12208

Dear Mr. Nosenchuck:

This letter is in followup to a call made to you by me on April 22, 1968 concerning the North River Water Pollution Control Plant.

As I said I am one of our members of a committee appointed by Borough President Percy Sutton on the recommendation of the New York City Board of Estimate, at its hearing April 4. We were charged with the task of reviewing with Hazen and Sawyer, engineers the alternate sites explored by them and any others suggested. A copy of the report is enclosed.

We would like to know:

1. Whether a new contract would have to be signed or whether the present contract could be amended to provide for a change of plant site.
2. Whether the contracts for intercepting sewers which are not to be changed due to plant relocation can be let now before completion of all the plans for the site.
3. How long could monies now committed for the plant in its present site be held while the amendments are being written.
4. What the state opinion is as to the best site as mentioned in the report.
5. What the state thinks especially of the 59th Street site and the resulting cooperation with the Pan American STOL-port for either part of the running or a parking garage.
6. What the state thinks would be a good estimate of new monies available for the site as a result of the changes.

7. Any other pertinent information.

We will report to the New York City Board of Estimate, Thursday, April 25, 1968, at 10:30 A.M. We would appreciate it if you could give us this information as soon as humanly possible so that we might inform the Board and thus contribute to its decision. My phone is 212/ 427-2450.

Thank you very much for your interest and consideration.

Yours truly,

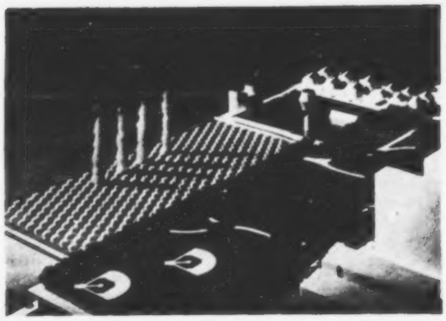
Edward F. Taylor

cc: Mr. Frank Baraff, Borough President's office
Lena Payne, Riverside Cooperative
Richard Fitzsimmons, Local 147 AFL-CIO

June 1968

LINDSAY'S NEW SEWAGE PLANT TO SMELL UP HARLEM

An ARCH Editorial



Harlem is about to be betrayed again. If Mayor John V. Lindsay and the City of New York has its way the choice Harlem shoreline on the Hudson River will be stolen for a giant sewage disposal plant for all of Manhattan West Side streaching eight blocks and whose smell would carry to all of Harlem.

This site was to have been used for much needed recreational and park space where Harlem children could go to cool off during the hot summer months. Now this dangerour and inefficient plant is being placed there, creating a health hazard that extends far beyond the eight blocks of shoreline and the five or more acres of valuable land it uses up.

The site is not even the best place to put it by city standards. The city was first going to put it on Ward's Island, where there is already a plant. Due to objections the city moved it down to 70th Street near the new Lincoln Center, and the heart of the rich white residential district. City engineers stated in writing that this site had many advantages over all other possible sites.

But too many rich and powerful white people didn't want that smelly plant in their background and Lindsay was thrown out on his ear. Now Lindsay brings it to Harlem. The Harlem News has made a detailed study of the plant and its effects on the surrounding community.

A Poor Plant

First, the plant is inefficient. The Federal government requires that any sewage plant constructed using Federal money should be at least 90% efficient in killing all germs and removing all wastes. State laws requires that sewage plants be more than 85% effective. This plant Mayor Lindsay's proposing according to the city's own engineers will be only 55% to 60% effective. This is true because the Harlem site selected is too small to hold a larger and more efficient plant. In the winter, the effectiveness can go down to 37%.

Every other city sewage plant built so far by the City (and all of them are very poor plants) are over 75% effective. This is the newest and the biggest and will be the poorest. What does this mean to Harlem? It means that up to half of the sewage will still be dumped into the Hudson River and float right down along Harlem's waterfront. And this is not only Harlem's sewage. This sewage is being pumped to Harlem from as far down as 14th Street. Thus, all the junk from New York's business district will be pumped up here to smell up Harlem.

This plant uses a lot of oxygen to do its work. A primary reason the plant cannot be made larger is that there is not enough oxygen in the air at the site for the plant to use. This means that during the long hot summers when the smog rolls in and makes it hard to breathe, this plant will be stealing the very air we need to live.

In trying to improve this plant the city has come up with the idea of using ozone gas to kill germs. But ozone gas can kill people as well. Therefore, no person can be allowed near the plant and no playgrounds or parks can be put in the land area not specifically used by the plant.

Plans are also underway to modify the plant by using chlorine as well as ozone gas to kill germs. Chlorine is odorless, tasteless, and deadly. Whole cities have had to be evacuated because one railroad car of chlorine was wrecked and quantities of chlorine gas escaped. Do we want this threat hanging over Harlem.

To silence the opposition he knew was coming Mayor Lindsay hired a well known architect to "beautify" the structure. The architect has proposed putting fountains on top of the plant to shoot streams of water over 200 feet high into the air. The fact is that a sewage plant is subjected to many toxic chemicals not the least of which are ozone and chlorine. What will the fountains and pools look like in a couple of years all corroded and stained.

The placement of this plant in Harlem means that in the future when all other cities on the Hudson efficiently clean up their parts of the river as they are required to do within ten years by the State, New York and Harlem will be the only place tied to this $220 million dollar albatross without any hope of swimming, fishing or other water based activity.

What Do We Gain?

Are there any jobs produced by this plant? The plant will provide only 60 new jobs and most of these will be professional so few if any Harlem citizens can benefit this way. The construction of the plant is managed from downtown so few if any jobs come from this.

Two million dollars was appropriated by the city board of estimate on February 16, 1966 to study of alternate sites. Only after massive pressure from the community was a report released in March 1968 and this was a "14 Day Wonder". What was done with this money? It was used to pad the pocketbook of Phillip Johnson for his "beautification" scheme and to buy off opposition to the plant.

City engineers, state and federal engineers, newspapers, Architectural Journals, independent research organizations all have commented on the tragic consequences of having such an inefficient plant in an area which cannot tolerate any more slum. It is only the "bullheadedness" of some of the bureaucrats down at City Hall that this project is being carried as far as it has. Even the "14 Day Wonder" Report stated that there were better sites to be found.

Finally, there is one more reason that we oppose this plant. It is not technical, it is not hard to understand, it is not involved. It is clear and simple: "We as Black people in Harlem want and will not settle for less than the RIGHT of SELF - DETERMINATION in Harlem. We have the right as citizens of this community to say what will be and what will NOT be placed in out midst and we will exert this right. Harlem does not want the plant, Harlem does not need the plant, and Harlem will not have the plant. On this and this alone we rest our case.

HARLEM NEWS
306 Lenox Avenue
New York, N.Y. 10027

Page 8 Harlem News JUNE, 1968

A WARNING TO HARLEM RESIDENTS

April 25, 1968 marked an important milestone in the long and sickening history of crimes by whites against non-whites and other minority groups.

On that day, an affirmative vote by: Mayor Lindsay, City Council President O'Connor, Comptroller Procaccino and all except three Borough Presidents, the Board of Estimate of the City of New York made a final decision to build on the shore of the Hudson River in West Harlem from 137th Street to 145th Street a monstrous (over 900,000 sq. ft) sewage plant which will pollute the air and endanger the health of the residents for many blocks around.

We are opposed to the attempt by the City of New York to impose upon the Harlem community the largest sewage plant in a residential area in the State of New York. The plant is 22 acres in size and will treat 220 million gallons of human filth each day. This sewage plant eventually will be, even enlarged. The Board of Estimate has approved constuction. But it can, must, and will be stopped!

We oppost this project, first of all, because it is a danger to health. One of the chief dangers is the use of Ozone which, according to Dr. Gerald Guall, Pediatricain at Columbia-Presbyterian Hospital along with other leading authorities, is one of the greatest, if not the greatest, lung toxic known to man. Thus, in addition to the ever present stench, the continued inhalation of air in the area can have a harmful effect on health, especially of the young and aged.

Secondly, we oppose the projedt because of the cynical way in which it has been dumped on the Harlem Community. As early as 1941, New York City contemplated a pollution plant on Ward's Islant to serve people on the West Side of Manhattan. In 1954 the site was changed to an area between 70th Street and 72nd Street, mainly because of lower costs. Because of protests from this "nice" area of the city, the site was changed. The City Planning Commission then urged the plant to be relocated above 125th Street but this was rejected as infeasible by City engineers for economic and engineering reasons, which are still valid today. Nevertheless, the City plans to go ahead with the present site. About two yeats ago, money was placed in the City's budget for the design of the project ane the study of alternate sites. During the next year and one half over One Million (1,000.000) dollars was spent on design. Until March of 1968, not one cent was on relocation. Then a minimal sum was spent to establish the "fact" that the 137th Street site was the best.

Thirdly, the project does not meet either State of Federal standards. No gesture of contempt is more vile or intolerable than for any man to deliberately defecate on another man's doorstep. Yet, this is exactly what the City of New York (with Mayor Lindsay's full knowledge and approval) prposes to do to the residents of the Harlem Community channeling on to Harlem's Hudson River shoreline 220 million gallons of human filth each day.

There is a feasible alternate site where this pollution plant can be plafed. The location is from 57th to 66th Streets which is not a residential neighborhood. We are not opposed to a sewage plant perse, therefore we are asking your help in having this proposed sewage plant relocated to this more suitable site. We do not believe it should be placed in any residential area WE NEED YOUR SUPPORT.

The Committee Against Harlem Sewage Plant
626 Riverside Drive

TO RESIDENTS ALONG THE LOWER HUDSON

As you know, the City of New York plans to build a sewage plant on the shore of the Lower Hudson from 137 Street to 145 Street. It will extend 600 feet into the River. We have fought this project for two and one half years. Since the health, welfare and well-being of the entire area are involved, we are asking you, as residents of the area to join us in this struggle.

We are all agreed that the Hudson is woefully polluted; a wind shift on any warm, humid day proves that. However, this is by no means the only place the plant can be constructed. No one seems particularly interested in what happens to the Hudson River below the George Washington Bridge. What will this plant do to the configuration of the River? At the maximum, this plant will be only 70% efficient, therefore, not adequate to cleanse the River. Even that 70% is not assured. In fact, there is strong reason to believe that its lack of efficiency will harm the very river it is supposed to cleanse.

We want this River clean and unpolluted. We want the Lower Hudson shore line to become a recreational area for fishing, boating, a healthy play area for our children and a sunny, green area in which our elderly can relax. We want to see water skiers use it to execute their daring without having their nostrils assailed by the present stench. Let it be clean enough for our young men to row proudly in their collegiate regattas without having to lift tons of debris with their oars.

Indeed! We do want the River clean! Its uneven and meandering shores should have such recreational areas rather than an eight block monolithic pile of concrete belching poisons from its fountains and gadgets into the atmosphere. There are few enough recreational areas, open air spaces and green oases because there is constant encroachment on our park lands. We want the River 100% cleansed and the park land surrounding it returned to the people.

No one seems particularly interested in what happens to the people in the area; the human factor has been overlooked in the City's quest to obtain State and Federal subsidy. Where will our elderly, up and down the Drive, who cannot climb the hill, go to sit in the sun and get a breath of fresh air? This park land along the River, regardless how deteriorated, is their only place of recreation; their lives are centered around it. Where will our young mothers go to air their children? Where will our children play? This area will no longer be theirs to use. They cannot sit in the shadow of a sewage plant, a health menace, a less than 70% effective monstrosity which gives off stench, fumes, gases and germs in its plumes of water.

The site for this plant was approved by the Site Selection Board on February 17, 1964. However, there is no reason why alternate, more efficient sites cannot be considered. There are such sites in non-residential areas and the City knows it. This is a residential area, purely and simply, not an industrial or commercial area. Why was this residential area selected? Since the City cannot say this is the most efficient or effective site for the plant, we feel they should be candid enough to explain to us why they selected this site.

Statement Prepared For the Board of Estimate, Capital Budget Hearing, City Hall, February 13, 1968.

In this, the Twenieth Century, the practice of disposing of raw sewage by allowing it to flow untreated into the Hudson River, appears to be an unscientific and primitive expedient. The intimate components of human wast can be seen, felt and smelled upon the River itself and upon adjacent land and connected bodies of water. Both fish and people find the polluted water untenable. However, let us ask ourselves, "Is human waste the major source of pollution?" The answer is that industrial waste contributes much more poison to the river than does the refuse of residential areas.

The mass of air above the River is replete with contaminants which also can be seen, felt and smelled. These products of industrial waste and the incomplete combustion of organic fuels are also toxic. Our practice of contaminating the atmosphere is also out of step with Twentieth Century science.

In mandating that a sewage treatment plant be constructed on the lower Hudson from 137 to 145 Street, the City of New York has given its residents hyper-toxic air as a substitute for an out dated sewage disposal system. The advantages of this substitution are dubious.

What of the unseen, unfelt and unsmelled? Sophisticated instrumentation reveals that both water and air are contaminated by microorganisms and toxic chemical substances all of which are capable of, at least shortening the lives of significant numbers of our citizens.

Filtration of raw sewage will remove many of the microorganisms, but not all of them, by any means. Spraying the aqueous filtrate into the atmosphere from fountains will introduce microbial aerosols which air currents can carry for considerable distances, thus contaminating large areas of the city with possibly contagious disease. The argument that treatment of the aerosols with ozone will eliminate this threat is ridiculous in light of the well-established fact that ozone is extremely toxic to humans, as well as microorganisms. Again, we find a worthless substitution of chemical poison for microbial disease. Bear in mind that an infection is much easier to treat than the extensive physiological damage done by a poisonous gas. We all react with shock at the news of a chlorine-laden ship in danger of releasing its cargo. Why then do we propose to legally release ozone, a gas at least as toxic as chlorine and one of the most dangerous pollutants in the notorious Los Angeles atmosphere? Are we unaware that the toxic effects of ozone are increased by exercise when the pallitive of playgrounds for our active children right at the site of sewage plant is offered us?

Must the life of this city and of its inhabitants be governed by expedient reaction to emergency situations rather than long-range planning? You require health, comfort and even luxury of science. Yet, you spend money on the renovation of Riverside Park with one hand, and allow the trees to be killed with the other. Many of us will miss the gulls and other birds which will disappear as we now miss the fish which once were abundant in the Hudson. No man-made structure can substitute for the already disrupted design of a far greater architect, one whohas given us the power not only to destroy all other living things, but ourselves, as well.

This is a plea for a more rational approach to problems generated by masses of people living together in confined quarters. What we need is thought and planning, not irrational compromise. You expect much of science. As a scientist, I hope it is not too much to expect a responsible approach to problems of public health and welfare from those who have been elected to serve the entire community, not a particular segment of it, or their own self interest.

M.A. Benjaminson, Ph. D.
Microbiologist, U. S. Navy

The Record, 150 River Street, Hackensack, N.J 07602

Why Plan Inadequacy?

SEP 30 1967 a 30

The agreement by federal, New York, and New Jersey officials to end pollution of the Hudson River by 1972 is welcome, but one is left with a question. SEWERS –

A key project in the cleanup program is the giant sewage treatment plant proposed for construction on the riverbank between 137th and 145th Streets in Manhattan. N.Y.C.

There has been opposition on esthetic grounds to the change the plant will make in the appearance of the Hudson. To meet these complaints, a distinguished architect has been retained for the job and fountains and landscaping have been planned for the roof.

But it was not widely known until Senator Robert F. Kennedy (D., N. Y.) called attention to the situation last week that the plant, modern and big though it will be, will remove only 60 to 65 percent of the wastes from the sewage, dumping the rest into the river.

That would be a vast improvement over present conditions, of course, since the sewage from half of Manhattan now flows into the Hudson without any treatment at all.

But treatment plants being built in other jurisdictions remove considerably more waste: 90 percent or more. It makes no sense to pour millions of dollars into a project that would be substandard the day it began operation.

Senator Kennedy suggests two ways to improve the installation: build it with several more decks or duplicate it downstream, at 66th Street perhaps. If the 145th Street plant should be very much taller than now planned, it would begin to be a real esthetic nuisance; so the 2-plant approach might be the best solution.

The people of New Jersey have nearly as great a stake in the project as New York, of course, for the river and its pollution touch both States and the treatment plant or plants will be just as visible from the west bank as from the east.

(COPY)

626 Riverside Drive
New York City, N. Y. 10031
July 24, 1968

Mr. John S. Farlow, Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality Mgt. Center
Edison, New Jersey, 08817

Re: North River Pollution Control Project

Dear Mr. Farlow.

My contacts with you by telephone and in person were very helpful to me. I am always pleased to meet people in government service who are gracious, helpful and fired with a desire that denotes profound interest in what they are doing.

We mentioned yesterday that many things in this total situation are puzzling and cast doubt in a number of areas. One of these doubts is Federal's apparent eagerness to subsidize this plant which, by some magic or number juggling will be made 90% effective. We have been talking about this lack of efficiency for years, but suddenly, between April 23 and May 16, 1968, it went from 55% to 90% efficiency. No human being should be asked to stretch his imagination so far. This is like having a moronic child achieve Phi Beta Kappa status over night. This is a numbers game which we feel Federal should be mighty sure of before subsidy. We have asked for drawings of the plant showing this dramatic improvement but, thus far, they have not been forthcoming. It should be noted that the Department of Public Works Commissioner, the late Eugene Hult, told us in conference on April 23, 1968 that the plant would never be more effective than 55% to 70%.

When I wrote Secretary Udall on January 3, 1968, Mr. John Barnhill replied on January 25 to the effect that you had not approved plans and did not intend to do so until you were satisfied that specifications had been met.

On March 9, 1968, a large group of us met with Mr. Max Edwards of Secretary Udall's office. This meeting was chaired by Congressman William Fitts Ryan. While Mr. Edwards was interested and wanted to understand the total problem, he obviously was surprised at the intensity of feeling this plant has created in this community. He promised to convey this to Secretary Udall. We elicited from him the fact that this plant would be only 55% to 65% effective. He said Federal would not reimburse unless the plant met your specifications. With this in mind, it was with some surprise that I read Mr. Barnhill's letter of June 25, 1968 to Mrs. Etta Crawford which advised that the City had been offered a Federal grant on May 11, 1968 to assist the Project.

Again, we know that sites are not your responsibility---only the Mayor can change the site---but we do believe it is your responsibility to see that the location of the plant does not destroy the character of the community or the character or configuration, beauty or grace of this majestic River.

Is Federal satisfied that a 10 block long concrete garbage plant should be thrust upon a community? Are you satisfied that this plant is being placed here and will intrude itself into every aspect of community life and inject itself into every detail of the community's existence? Are you satisfied that

(COPY)

its stench and ugliness will not cause real estate values to deteriorate? We know that a primary and secondary treatment is needed, but is any other area being asked to bear the total burden and smell the stench? Of course not! Is it not more equitable to put a primary plant one place and a secondary plant farther down-river?

We have heard so much talk through the years, so much backing and filling, so much stretching of the truth that you must pardon us if we are wary. There has been so much fictionalization that the real core of this problem gets a bit obscured, but if one is endowed with a good memory and a strong constitution, one can survive in that kafkaesque world known as the Municipal Building, NYC.

Let me underscore:

We do not believe that a 10 block long sewage plant should be constructed in any residential area,--not just here, not just ours not anywhere.

a. at the closest point it will be only 400 feet from houses.
b. No one in a responsible position has said one word about the negative impact this plant will have on the River.
c. The River will be more polluted,
d. The River's configuration will be forever destroyed.
e. Park land on the River's shore will no longer be ours to use.
f. The River, one of our greatest natural resources is being down-graded to a second-class stream. It is one of our historical treasures, world famous and surely merits a better fate.

What about alternate sites? It is our opinion that the City is not interested in alternate sites because they rejected the report of engineers it had hired. Why not two sewage plants at widely separated areas---one primary and one secondary. In this way, the negative effects can be spread more thinly and accepted with more equinimity.

No one is more convinced than we that the Hudson is polluted and must be cleaned, but the whole method of government approached on three levels indicates that no one sees people or the River---only cold subsidy.

I have enclosed for your records and perusal the following:

1. The statement prepared by Lena Payne for submission to the Water Pollution Control Conference at Rockefeller University on July 23, 1968.
2. Statement prepared by Professor Stanley Feingold dated Jan. 20, 1966 for presentation before the NYC Board of Estimate.
3. Statement February 8, 1968, "To Residents Along the Lower Hudson", prepared by Lena Payne.
4. Ozone, by Dr. Gerald Gaull prepared for submission to the Board of Estimate, February 13, 1968.
5. Statement prepared by Lena Payne for submission to the Board of Estimate April 25, 1968.
6. Site and plant study undertaken by Lena Payne, Edward Taylor III, Richard Simmons, sandhog's union and Frank Baraff, Borough President of Manhattan representative. At the behest of the Board of Estimate, the Borough President of Manhattan selected the above mentioned people.
7. A statement by Dr. Morris Aaron Benjaminson prepared for reading before the Board of Estimate on February 13, 1968.

Again, I wish to express my gratitude for your courtesy and helpfulness. I shall appreciate being notified of future meetings.

I have sent a copy of this letter to Secretary Udall.

Very truly yours,

Lena Payne

Lena Payne, Chairman
Committee for an unpolluted
Lower Hudson.

July 23, 1968

TO: Mr. John S. Farlow, Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality Management Center

From: Lena Payne, Chairman
Committee for an Unpolluted Lower Hudson

The following statement has been prepared for submission before the Public Meeting on Impact of Pollution on Our Coastal Waters on July 23, 1968, Rockefeller University.

From earliest childhood, most of us recall vivid stories about the Hudson River. Our geography books were replete with praise of its discovery, its grace and beauty, its many usages by Indians and early settlers, its fishing, its navigational capabilities, its shipping and cruise prowess and what all of these meant in the settlement of upstate and downstate New York and New Jersey. Because of its tidal quality, the Indians, the first settlers on its lush and unblemished shores called it, 'the River that runs both ways'.

This mightiest of Rivers has fallen victim to man's march of progress. It is polluted in its lower regions!-- no longer fit for swimming, fishing and a variety of uses for which it served those who earlier inhabited its shores. Commercial, industrial and governmental neglect all have played a role in its present condition and plight.

Since 1941, New York City has contemplated treatment to correct the River's ills. After years of delay and indecision, the City of New York, spurred on by State and Federal subsidy, has decided to build a sewage disposal plant to clean the River. However, those who love this majestic River and our disappearing park lands are concerned. The announced plans call for a primary and secondary sewage plant to run for ten blocks from 135 Street to 145 Street and the River and extend 600 feet into the River from the shore line. It is to be a monolithic pile of concrete, ugly in design and not guaranteed to cleanse the River. Estimates of its maximum efficiency range from 55% to 70% and even that 70% is not assured. This lack of greater efficiency has been attributed to site limitations. 220 million gallons of raw sewage will pass through this plant daily for treatment.

One can readily see what 55% to 70% efficiency will mean. The River will be even more polluted and because of its currents, the Upper Harlem River, a recreational area, will be adversely affected. The configuration of the River, with its sharp indentations of shoreline at this point will be forever be destroyed. If there are fountains atop this plant, they will throw sprays of water 200 feet into the air and its unusable pools on the roof can only produce a garish effect, unworthy of the Hudson.

The tragedy is that the Department of the Interior has been led by the City of New York to believe that 90% efficiency will be reached at some future date. When? Who will say? This just does not happen. The history of sewage plants is that they deteriorate rapidly during the first four years and this deterioration sets in soon after original operations start. The most serious and pervasive element in the entire undertaking is that you, the Federal Pollution Control Administration have listened to the dulcet, muted song of the New York City representatives and abandoned your own standards. This constitutes a down-grading of Federal standards and a down-grading of the Hudson River to a second-rate stream-- not worthy of adherence to Federal standards or protection under Federal's own policy.

We are all agreed that the Hudson River is polluted; a wind shift on any warm, humid day proves that. But must this mightiest of Rivers be down-graded to second class status? Why is the City content with 70% efficiency or less? Why cannot the City try for 100% efficiency? Why are State and Federal willing to subsidize this project when their own standards which require 90% efficiency in cleaning polluted waters are not being met? What about the use of ozone to sweeten the stench? This gas is toxic when it is in combination with car exhaust fumes. No engineer has given an unequivocal guarantee that this plant will not smell or that the

the ozone will not be harmful. This plant, located as it it in the middle of a densely populated residential area poses a serious potential health and no engineer will deny that either.

The quest for State and Federal financial participation, with resultant deadlines for completion, has caused the City to impose this industrial plant on a heavily populated residential area. At one point, the plant will be only 400 feet from houses. This poor planning for the Hudson River sounds the death knell for this River as one of our great, natural resources. Aesthetic and recreational values, instead of being enhanced, will be diminished. It sounds the death knell for an on-going community which previously was scheduled for up-grading by City and State. This assures that the area will deteriorate into a ghettoized community-- made so by forces outside itself. It precludes the possibility of access to the shoreline.

We have no quarrel with the need to clean the River and keep it clean. Long ago, we were firmly convinced of the necessity for providing effective sewage treatment for the 650,000 people on the Western side of Manhattan. A sewage plant to serve the west side area is legally mandatory and socially desirable. The question is not whether we build it but where and how. We know it is not the responsibility of State or Federal to involve itself with sites; that is solely within the province of the City authorities. However, we are raising serious doubts about Federal's plan to subsidize this plant when the City cannot prove that this is the most efficient site for such a plant. No one is persuaded that the City has even casually considered alternate sites in non-resident areas recommended in an engineering report prepared by an engineering firm hired by the City in March 1968 to seek and recommend alternate sites. The City hired this firm but promptly rejected its recommendations. Thus, the taxpayers' money was squandered.

We want this River clean and unpolluted. We want the Lower Hudson shore line to become a recreational area for fishing, boating, yes, even swimming, a healthy play area for our children and a sunny, green oasis in which our elderly can relax. We want to see water skiers use it to execute their daring without having their nostrils assailed by the present stench. Let it be clean enough for our young men to row proudly in their collegiate regattas without having to lift tons of debris with their oars.

Indeed! We do want the River clean, but we do not want it destroyed in the process. Its uneven and meandering shores should have recreational areas rather than a ten block concrete monolith belching poisons from its gadgets into the atmosphere. There are few enough recreational areas, open air spaces and green areas because there is constant encroachment on our park lands. We want the River 100% cleansed and the park land along its shores returned to the people. We want it cleaned and we want access to it.

The very broad areas regarding which we have serious questions and doubts will be handled in a communication to Interior Secretary Stewart Udall.

THERE IS NO POSSESSION MORE PRECIOUS THAN OUR NATURAL RESOURCES; WHAT GREATER NATURAL RESOURCE THAN OUR HUDSON RIVER AND OUR PARK LANDS!

Lena Payne

Lena Payne, Chairman
Committee for an Unpolluted
Lower Hudson

626 Riverside Drive
New York City, N.Y. 10031

January 20, 1966

My name is Stanley Feingold, and I reside at 626 Riverside Drive. I am an Assistant Professor of Political Science at the City College of New York, and I appear here in my role as Chairman of the Ad Hoc Committee on the North River Pollution Controll Project of the Advisory Council of River View Towers.

When I began my own examination of this project six months ago, I was persuaded of the necessity of providing effective sewage treatment for the 650,000 people on the western side of Manhattan. I still am. A pollution control plant to serve this area is legally obligatory and socially imperative. The question is not whether we build it: rather, the question is where and how.

Recognition of the need for this plant dates back at least to 1941. From that year until 1954, the intended site was Ward's Island, where, incidentally, there presently exists a plant that treats approximately the amount of sewage that must be treated by the proposed plant: a total of 220 million gallons of sewage per day. In 1954, the proposed site was moved from Wards Island to the Hudson River between 70th and 72nd Streets, principally because of lower costs.

When community groups protested, the City Planning Commission urged that the plant site be moved to West 125th Street because "a considerable number of high value, multi-story apartment houses and apartment hotels are located in the vicinity of the (West 70s) site." I repeat the reason tendered by the City Planning Commission: It was not because there was a major fault (the reason given to me by Mr. Samowitz of the Budget Bureau), not because the site area was too small (the reason given me by Mr. Soreff of the Department of Public Works); the reason was the existence of high value residential dwellings in the area.

The Department of Public Works examined the suggested site at 125 Street, and rejected a site north of 125 Street because it would be more expensive and it would be harmful to conditions on the Upper Harlem River. The division of flow coming into the plant from the north and the south would be unequal, and engineering costs consequently would be higher, at the 125th Street site as compared with the 70th Street site. The sludge fleet disposing of waste product would have to travel a longer distance, at greater cost, to and from the 125th Street site. Because it is closer to Class A waters--cleaner water in which public bathing is feasible-more expensive treatment of the sewage would be necessary at the 125th Street site. Furthermore, the more northerly site would adversely influence conditions in the Upper Harlem River, a recreational area. All of these reasons were given by the qualified engineers employed by the City of New York in favor of the retention of the site designated at 70th Street.

These reasons for rejecting the proposed 125th Street site are important because, without exception, they are applicable with equal--- and sometimes with greater-- force to the present site. Yet, by 1961, our site was under consideration, and in the following year, the City Planning Commission abandoned the West 70th Street site and substituted the present location between 137th and 145th Streets.

I must confess to ignorance of much of the negotiation in the years between 1955 and 1960. Repeated efforts to obtain information on why and how the changes were made have been futile. On two occasions, officials of the City Planning Commission have told me that they have lost or misplaced their file on this period. Other departments have been helpful, but have provided nothing on this period.

Our public servants have sometimes cooperated, and on other occasions they have been something less than candid. I have already referred to the discrepancies in the recollections of present public officials and the documentary material regarding the change of site from 70th Street. Allow me one additional illustration. In 1955, Mr. Soreff, the project engineer, listed the reasons already cited for rejecting the site north of 125th Street, and in the last paragraph before his conclusion, he stated that a plant at 125th Street "may conflict" with a possible bridge to New Jersey. In 1965, on at least two separate public occasions in my presence, Mr. Soreff has categorically stated that the interference of the plant with the possible bridge was the principal reason for rejecting the 125th Street site.

For the citizen seeking the factual and policy basis upon which the present site was selected is to enter into a Kafkaesque world, also known as the Municipal Building. Yet some things are clear and some facts are incontrovertible. I submit that the following are facts:

One. Only three sites have be considered since the City abandoned its plan to build a tunnel to Wards Island to transport the sewage.

Two. The City, supported by engineering opinion, adopted a site between 70th and 72nd Streets. Engineering opinion held that this was the best and most economical site in Manhattan. I have sought, but have not found, any engineering study that contradicts this opinion and holds that the present site is the most desirable.

Three. The City Planning Commission urged an alternative to the 70th Street site because the West Side's population density, not for engineering reasons.

Four. The Department of Public Works rejected *any* site north of 125th Street for a number of still cogent reasons, including greater cost and risk of pollution.

Five. A tunnel will carry sewage from the lower eastern part of Manhattan to Newtown Creek over a considerably greater distance necessary to carry sewage from the upper part of Manhattan to Ward's Island. As a result, both the lower eastern part of Manhattan (at Newtown Creek) and the upper eastern part (at Ward's Island) will be serviced by plants not physically located on Manhattan Island.

My other conclusions do not lend themselves to the same documentation as the above, but I do not consider them either less important or less imperative. Ours may not be as politically articulate a community as the West 70s-- there is no record of any public representation opposing the present site in key open hearings before the City Planning Commission and the Site Selection Board-- but I do not believe the City can ignore our community interest even if we were mute.

It is true that a Ward's Island plant will cost more because of the tunnel that must be constructed. Rough estimates have suggested $25 million more added to the $128 million the project will now cost at the present site. Against this would have to be placed the engineering advantages in designing an optimum project without compromises dictated by community considerations.

How do we put a price on the beauty of the Hudson River, the very river this project is designed to improve? The Regional Plan Association has criticized the planned project because, in its view, the plant "could damage the appearance of the River, which, paradoxically, it is intended to improve."

More important than the river is the people. The area just north of 125th Street and west of Broadway offers New York City great opportunities for urban development. Few areas of the City, and probably none in Manhattan, offer the advantages of this area for future growth with a minimum of relocation. The area is now sparsely populated; it contains small manufacturing plants, garages, gas stations, wholesale meat markets. It is seedy and run-down; it is a blight that could become a blessing. It is appalling to contrast Columbia University's plans for development south of 125th Street with the general neglect of this area.

Yet great possibilities for community development exist, as can be demonstrated by the new middle-income housing cooperative apartment houses that rises on Riverside Drive between 139th and 140th Streets, and in which I live. Into a predominantly Puerto Rican Community--but which still contains a Russian-language bookstore and a Greek-speaking grocery-- have come nearly four hundred new families, many Negro professional and white-collar families, many white, some Chinese and Japanese, and a number of interracial families, almost all young. Educated and aspiring, they have invested their savings--and borrowed fpr the investment-confident that they could shape an environment in which to live and raise their families with pride.

Other middle-income cooperatives and private rental housing can

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be attracted to this area. It offers excellent transportation facilities, many schools and two universities, and the River. Many Columbia students would be able to seek less expensive housing, and City College students, more of whom live away from home than the authorities guess---could create a defined academic community. But all of this is less likely if the pollution control plant is placed at our doorstep.

The proposed plant will consume a large part of our riverfront. Twenty-one hundred feet long, extending six hundred feet into the river, it will be an industrial-looking system of low buildings and higher tanks. Visually, it will be an eyesore. What is perhaps worse is that no reputable engineer can assure us that it will not also be a nosesore. Unpleasant odors are inevitable some of the time, adversely influencing both residents and highway riders.

I sadly state that the building of this plant will have a demoralizing effect upon the new residents of the community and a disastrous effect upon the prospect of future development. We have been asked: What if the plant is covered up, landscaped, and grass sprouts from its roofs? We reply: Will it smell sweeter? The City is properly ashamed of building a plant across the street from a densely-populated area. There is a better solution than covering it up, and that is taking it away.

As a last resort, when their other defenses have been abandoned, the city engineers tell me that time is running out, that the Interstate Sanitation Commission will not give us beyond 1970 to complete the project. It is true; we do run the risk of a fine, or perhaps our Mayor will be put in jail, but I doubt it. If it has already taken us a quarter of a century, and no construction has started, we may be justified in taking two or three years longer, and building it right, and in the right place.

Engineers with whom I have discussed the project are of the opinion that Ward's Island is the right place. The least we ask for is that the Mayor postpone any capital appropriation and instead recommend an appropriation for an engineering feasibility study at an alternative site, specifically Ward's Island.

We shall not abandon---and we shall not consent to the city government's sabotaging--the hope that our neighborhood holds out for desirable, decent and integrated housing and the building of a better community tomorrow.

TO RESIDENTS ALONG THE LOWER HUDSON

As you know, the City of New York plans to build a sewage plant on the shore of the Lower Hudson from 137 Street to 145 Street. It will extend 600 feet into the River. We have fought this project for two and one half years. Since the health, welfare and well-being of the entire area are involved, we are asking you, as residents of the area to join us in this struggle.

We are all agreed that the Hudson is woefully polluted; a wind shift on any warm, humid day proves that. However, this is by no means the only place the plant can be constructed. No one seems particularly interested in what happens to the Hudson River below the George Washington Bridge. What will this plant do to the configuration of the River? At the maximum, this plant will be only 70% efficient, therefore, not adequate to cleanse the River. Even that 70% is not assured. In fact, there is strong reason to believe that its lack of efficiency will harm the very river it is supposed to cleanse.

We want this River clean and unpolluted. We want the Lower Hudson shore line to become a recreational area for fishing, boating, a healthy play area for our children and a sunny, green area in which our elderly can relax. We want to see water skiers use it to execute their daring without having their nostrils assailed by the present stench. Let it be clean enough for our young men to row proudly in their collegiate regattas without having to lift tons of debris with their oars.

Indeed! We do want the River clean! Its uneven and meandering shores should have such recreational areas rather than an eight block monolithic pile of concrete belching poisons from its fountains and gadgets into the atmosphere. There are few enough recreational areas, open air spaces and green oases because there is constant encroachment on our park lands. We want the River 100% cleansed and the park land surrounding it returned to the people.

No one seems particularly interested in what happens to the people in the area; the human factor has been overlooked in the City's quest to obtain State and Federal subsidy. Where will our elderly, up and down the Drive, who cannot climb the hill, go to sit in the sun and get a breath of fresh air? This park land along the River, regardless how deteriorated, is their only place of recreation; their lives are centered around it. Where will our young mothers go to air their children? Where will our children play? This area will no longer be theirs to use. They cannot sit in the shadow of a sewage plant, a health menace, a less than 70% effective monstrosity which gives off stench, fumes, gases and germs in its plumes of water.

The site for this plant was approved by the Site Selection Board on February 17, 1964. However, there is no reason why alternate, more efficient sites cannot be considered. There are such sites in non-residential areas and the City knows it. This is a residential area, purely and simply, not an industrial or commercial area. Why was this residential area selected? Since the City cannot say this is the most efficient or effective site for the plant, we feel they should be candid enough to explain to us why they selected this site.

This matter is to be heard on February 13, 1968, early evening, before the Board of Estimate, Capital Budget Hearing, City Hall.

Won't you come out to express your opinion before the Board and lend us your moral support?

Committee for an Unpolluted Lower Hudson
Lena Payne, Chairman
234-5296

Gentlemen of the Board of Estimate:

Re: OZONE

You have heard the sociological, political and economic arguments against the North River Pollution Control Plant. We are assured by all the appropriate city officials that there will be no odor since the fumes will be deodorized with ozone. We are not told of the dangers of ozone. I come to discuss this problem as a hazard to health. I come to discuss this as a $130 million gamble with the chips being the health of our children. I come to discuss this as substitution of air pollution for water pollution.

It is undoubtedly unknown to the Board that it is only seven years since the first written suggestion that ozone be used to purify and deodorize sewage. Thus, the total experience with the problems involved is very small.

The history of medicine is replete with examples of well-intentioned, but premature efforts to use the most "modern" methods available for the benefit of the people, only to discover later the tragic truth. Thus as we come to learn that DDT is a powerful "people-icide", as well as insecticide, continuous decreases in the maximal tolerable dose to man are being made. I remember well that my mother would never buy me shoes unless she could see the fit under "the x-ray machine", a practice now known to be dangerous and appropriately outlawed.

Knowledge about the problem of ozone toxicity is so incomplete that in a recent telephone conversation with Dr. Bernard Saltzman, one of the world's leading authorities on ozone, he strongly doubted that ozone would effectively oxidize hydrogen sulfide, the major noxious odor of sewage. He further pointed out that it is probable that whatever deodorizing properties o ozone has depends on it being present in sufficient quantities to anesthetize the nerve endings of the nose.

If it must be present in such large amounts, what are the hazards?

1. Ozone is one of the most powerful lung poisons known to man and the maximal permissible dose to man has fallen twenty-fold since the first documentation of toxicity to man, which only goes back to 1951.
2. It has been shown both in man and animals that it will increase susceptibility to infection and may make relatively minor infections fatal.

(Continued)

3. It strikingly increases the incidence on cancer of the lung in a strain of mice susceptible to lung cancers, at doses we now consider "safe in man".

4. It has been demonstrated to result in breaks in human chromosomes, the material of genetic transmission. This opens the possibility of transmission of induced genetic defects for generations.

5. Just last year it was shown to result in birth defects in mice at doses within the maximal industrial dose limit.

6. It has its greatest effects in young animals especially young, excercising animals; presumably the human is no different. Are we to find out on 135th Street?

7. Its toxicity is doubled with only a rise of 15° F.

Ah, but we have been assured that no consequential amounts of ozone will escape into the neighborhood atmosphere! We shall forget for a moment the poor sanitation workers in the plant, since they are now presumably paid enough to take high risks.

How will we know how much of this poison is in the atmosphere? I submit that we will not know, because only within the last two years have the real difficulties of monitoring ozone become known. I shall not go into the details of its determination by the reduction of potassium iodine, but I assure you I have gone into them carefully with Dr. Saltzman, who knows more about it than any one else in the world. Sulfur dioxide and hydrogen sulfide interfere with the measurement of ozone. While it is now known how to get around the sulfur dioxide problem, the problem with hydrogen sulfide is not at all solved.

A further complication of monitoring is that doses of ozone and sulfur dioxide which by themselves are apparently harmless may together result in obvious toxicity.

Can we, thus, picture a hot summer's day, with an air inversion, an accident on the West Side Highway with hundreds of cars spewing forth their own toxins, our children frolicking in the City Park playgrounds 200 yards away? How much Ozone does it take under these conditions to kill a child? No one knows. How much Ozone does it take under these conditions to result in chronic lung disease in a child? No one knows. How much Ozone does it take under these conditions to result in transmissible genetic defects? No one knows. (Continued)

I prefer to think that those charged with the responsibility of planning this project are not aware of the potential dangers. If this material is known to them, one can only wonder at their temerity!

Gentlemen, I appeal to you in behalf of the children of our neighborhood and their inarticulate parents to place this hazard to the health of the present and future generations of West Harlem in a non-residential area. I ask you whether any savings of money or decisions based on political expedience are worth the risk to our young. If your answer is yes, then the citizens of this area will ask you to be prepared to defend your decision in the courts.

- GERALD E. GAULL, M.D.

April 25, 1968

STATEMENT READ BEFORE THE BOARD OF ESTIMATE ON APRIL 25, 1968

My name is Lena Payne. I am Chairman of the Community Relations committee, board of directors of River View Towers Inc. We are an elected body charged with the responsibility of handling the affairs of an $8,000,000 middle income cooperative development. In our capacity, we range over a broad cross-section of the community and work in concert with that community on matters of mutual interest.

We have spoken before this Board on innumerable occasions about the sewage plant and on the basis of our experience, we have some serious questions about our total communication with the Board. Repeatedly, we have stated that we are fully in agreement with the proposal to clean the Hudson River; it is mandated by law and socially desireable. Repeatedly, we have said that this plant or any plant should not have been located in our area, and just as frequently, we have said that this plant or any other plant should not be located in any residential area. We are neither crass enough nor narcissistic enough to say 'put it anywhere, but not here'. We have empathy for our fellow man regardless where he lives. If we had any unresolved questions about a sewage plant in a residential area, they were dispelled on April 18, 1968 when we visited Owl's Head and Coney Island plants. The smell at Owl's head was bad enough, but the stench at Coney Island, which permeated the entire atmosphere on a clear, moderately warm, slightly windy day, should not be visited upon dumb animals, let alone human beings.

Thus far, no one has presented documentation to prove that the North River sewage plant will be any less malodorous. No one seems particularly concerned that this area, which the State and City announced in February 1962 that they planned to upgrade, will become a slum, the final nail in the coffin of blight. The community is more and more expressing its conviction that the City Administration cares very little for us and has placed this sewage plant here because of their callous disregard for the inhabitants of the area. This community, black and white feel victimized and are raising serious questions.

We are strongly recommending that this plant be moved to the 57 Street area of the Hudson; this is the recommendation of Hazen and Sawyer, engineers. That area is a seedy, run-down rotting pier area, most of which is dilapidated industrial area no longer in use. It is not a residential area and the health and welfare of people would not be a factor.

Mr. Mayor, we are requesting that you, the Mayor of the City of New York and the Vice Chairman of the President's Commission on Civil Disorders translate some of the intent of that Report into action by voting to relocate this plant to a non-residential area. Only you, the Mayor of the City of New York has the power to change a site once it has been selected by the Site Selection Board and we are strongly recommending that you exercise that power whil we attempt to deal affirmatively with the community. In August 1966, we asked you to visit our community and talk with our people the same as you have done in other areas, but you have not done so. This community needs some demonstration of good intentions on your part.

Lena Payne

Lena Payne, Chairman
Community Relations Comm.
Board of Directors
River View Towers Inc.

REPORT OF THE COMMITTEE APPOINTED BY THE BOROUGH PRESIDENT OF MANHATTAN ON ALTERNATE SITES FOR THE PROPOSED NORTH RIVER WATER POLLUTION CONTROL PLANT

HISTORY

The Department of Public Works of the City of New York has proposed that a sewage treatment plant titled the North River Water Pollution Control Plant, which would serve all of the western side of Manhattan Island be placed on a site at 143rd Street on the Hudson River. At a public hearing held by the New York City Board of Estimate on April 4, 1968 opposition was heard from some of the residents of the site where the sewage plant was proposed to be located. Testimony was also taken from Local 147 of the AFL-CIO commonly known as the Sandhogs union asking that work be provided for its members immediately.

As a result of the public discussion the Board of Estimate on that date voted to continue the hearing until April 25, 1968. The Board asked Manhattan Borough President Percy Sutton to set up a committee whose membership represented the important interests concerned with the sewage plant: community, labor, and government and enpower them to investigate alternate sites with consulting engineers provided by the city.

Miss Lena Payne of the Riverview Towers Board of Directors and Mr. Edward F. Taylor of the Architects Renewal Committee in Harlem were selected to represent the community and Mr. Richard Fitszimmons was selected to represent Local 147, AFL-CIO. Mr. Frank Baraff of the Borough President's office was designated to be Mr. Percy Sutton's representative on the committee.

The Alternate Site Study as written by Mssrs. Hazen and Sawyer, Consulting Engineers of 360 Lexington Ave. NYC for the NYC Department of Public Works was read by all and a meeting was set up with Mr. Hazen and Mr. Walters of his staff, where the Inwood, Dyckman, 143rd, 72nd, 66th, and 59th Street Sites were visited.

Existing city sewage plants and plants in contiguous areas were visited. Thes include: the Owls Head Sewage Treatment Plant, the Coney Island plant, the Town of Mamraneck plant, and the Yonkers plant. The committee was not able to tour the Yonkers plant. At the other tours were made, equipment inspected, and local residents interviewed. Assisting in the inspection were the Chief Designer for Intercepting Sewers, Mr. Smith, and the Assistant to the Chief of Plant Operations, Mr. Wagner - both of the Department of Public Works.

On Tuesday, April 23, a conference was held with Mr. Eugene Hult, Commissioner of Public Works of the City of New York. A letter was also sent to the N. Y. State Department of Health c/o Mr. Norman Nosenchuck.

The results of this survey are as listed below:

I consented to be on this committee to study Alternate Sites for the North River Pollution Plant because I thought that I could contribute something to the discussions of the committees. I represent the Architects Renewal Committee in Harlem, a group of Black Professional Architects and

City Planners involved in advocate planning in the Harlem Community. I am serving a year as a VISTA Volunteer and was assigned to this organization. I have a Master's Degree in Electrical Engineering from Rensselaer Polytechnic Institute, Troy New York. I have had some minimal training at Rensselaer and at Cooper Union in the basics of structural design and am able to understand reports on the plant design reasonably well.

As a first step in understanding the problems posed by a sewage plant four existing plants in the areas were inspected as to their effects on the surrounding communities.

At the Owls Head Sewage Plant there was a noticeable odor but only within 15 feet of the exaust vent and within 50 feet of the ground level doors. It was a sunny spring day, a good breeze was blowing and whatever smell there was was dissapated by the wind. However while we were there only one of the seven aerators used to purify the sewage and which contribute to most of the smell was in operation. The others were shut down, according to Mr. Wagner because there was no need for them during the winter. In the summer when they are operating the smell would definately have to be worse.

A second observation was that all equipment in the plant seemed to be very corroded due to the high humidity inside the plant. Thus any esthetic devices used to beautify the plant would have to be very carefully planned to withstand the corroding influence of the plant atmosphere.

At the Coney Island plant site there was a definite noticeable odor up to three hundred feet from the plant. At least two of their aerators were shut down for the winter so that the maximum effect could not be seen. Also for some reason the ozone apparatus had broken down and was not used.

A family living about three hundred feet away from the western side of the plant stated that in the past the smell from the plant was so bad that they could not sleep nights, The worst time for plant smell was at night and on some weekends. They had written letters of complaint to the city and had many promises made correcting the complaints. They did say that a year ago the city made repairs on the plant that made the smell somewhat bearable while before it was intolerable. Mr. Wagner stated that about a year ago powerful blowers like those proposed to be installed at North River were installed to blow waste gases high into the atmosphere allowing them to disperse more easily. The family interviewed also complained about the smell of the "perfume" used to deodorize the plant during cleanup, saying that it was worse than the smell of the sewage.

Children playing in the ballfield adjacent to the plant stated that at times the odor from the plant was very bad. Half of the children who lived in an apartment building nearly five hundred feet from the plant site said they could smell the plant from their apartments at times. The other half said they couldn't. This was explained to be because they lived in apartments with windows facing away from the plant.

The Mamroneck Sewage Disposal Plant which we toured was very small, only 10 million gallons per day versus 150 mgd for Owls Head, 110 mgd for Coney Island and 220 mgd for North River. However it was the most modern of the plants surveyed. A garden was planted upon the top of the plant and the equipment inside was newly painted but in very good repair. Ozone was used to scrub waste gases and was effective in eliminating most of the smell. Chloringe gas was also available to treat sewage in the summer. A very thorough sewage treatment process was used, more than that planned for the North River

Plant. Finally the sewage residue was pumped two miles out to sea before being expelled in to the water. The plant was not only able to handle normal load but was able to offer treatment to any normal storm water runoff that might be encountered. This is not contemplated at North River. Were the quality of sewage control shown to Mamroneck duplicated at North River I am sure North River would cost twice as much as it does now. In conclusion this plant should not be compared with North River because of the twenty-to-one discreprancy in sizes.

No conclusions could be drawn from the Yonkers site.

It was brought out by the chief engineer for intercepting sewers, Mr. Smith, that contracts for the Northern and Southern ends of the tunnels would be ready for bidding in May and changes in the plant site would NOT materially affect these designs. However a change in plant site WOULD affect the contract upon which the Board of Estimate is now voting. A letter was sent to the Deputy Commissioner of the State Department of Health through Mr. Norman Nosenchuch, his assistant and a reply is now awaited. A copy is appended to this report.

Of the alternate sites studied by the report the sites at 59th or 66th Streets would seem to be optimum from the standpoint of efficiency, plant cost, and community impact. The area is now owned by the Penn Central Railroad who have many rotting piers standing idle.

Private inquieries by the Department of Public Works and Hazen and Sawyer have shown that the Penn Central Railroad is not averse to the site being used for the sewage plant if suitable access routes are planned so as not to intefere with operations at the sideing. Indeed Penn Central has the go-head for Pan American Airways to study the feasability of placing a STOL-port off 64th Street.

Pan American had also been contacted by Hazen and Sawyer and were not averse to coordinating their STOL-port plans with those of the plant design. The foundations would be essentially the same for both projects and the roof of the plant could either support the STOL-port runway or an adjacent plane or car parking lot which would coordinate with the port. Even disregarding the STOOL port idea, the roof of the sewage plant could be used effectively as a paying proposition by placing a parking garage on it. Factory and office space are very crowded near this site and everyone knows that many more parking garages are needed in this part of Manhattan.

The area of course is totally industrial. The only residences nearby are on Eleventh Avenue nearly 1400 feet from the site. Thus no resident opposition need be expected and the commercial landlord in the area, Penn Central, has already expressed some interest. Plans by the City Planning Commission for the area are still very fluid and I am sure this plant could be included.

At all other sites (except Inwood) considerable community opposition could be expected. At Inwood opposition from conservationists could be expected. Also plant costs jump encurmously as the site is moved further North. Thus these sites I would consider as not very good alternatives to the present site.

It has been said that the city will lose Federal and State money if construction is delayed. I see no reason that the construction need be delayed more than two years at the most due to the fact that in the plant proper only the caissons supporting it need to be redesigned, and of the intercepting sewers only the central portion need be redesigned. It will, of course be up to the city to push through authorization will all possible speed but I am sure that with the cooperation of the interests displaced by the plant this is a mere technicality. Labor and material costs will rise during the period of waiting but it is also reasonable to expect that the Federal share of the costs will rise also as the government is pressured to give more that lip service to urban cleanup.

Therefore I must conclude that the most logical conclusion for this Board of Estimate to take is to do as much as it can to see that a solid, concrete feasability study be undertaken by the Department of Public Works on the 59th or 66th Street sites and bearing unforseen complications all plans be changed accordingly.

Yours truly,

Edward F. Taylor III
Architects Renewal Committee
in Harlem

REPORT OF RICHARD FITZSIMMONS, SANDHOG UNION

I, Richard Fitzsimmons, Business Representative of Local No. 147, Sandhogs was the man from the Union picked to go along with the two members of the Community and Representatives from Hazen and Sawer, Engineers to inspect alternate plant sites. I have studied Hazen and Sawyer report and after talking with Mr. Hazen and Mr. Dick Walters and agree with the report in general.

We visited Owls Head plant. There was a definite smell inside - slight smell 15 feet from the vents - no smell 20 feet from vents. As far as smell directly outside plant we were told by Mr. Ed Wagner from Public Works, it was because two large steel doors were open.

We then visited Coney Island Plant and there was a smell on Knapp Street. I went out on Saturday and talked to the renting agent of Sea Crest Towers, Mr. Frank Galisanki, the address is 3080-3090 Voorshies Avenue. These apartments were built three yeard ago. Out of 315 apartments there are three vacancies. Rent when the apartment firs went up was $211 for five rooms. The renting agent said they are now trying to get rid of the tenant as they could get $290 a month now for the same apartment. I talked to a woman who lived approximately 200 feet from plant. She said there was a bad smell when she first moved there seven years ago. The City had taken measures to correct the smell but it could be better. I would like to stress that this plant is part closed and part open, whereas the plant in Owls Head is completely enclosed.

The Plant in Mamaroneck was a beautiful plant, We were told by Mr. Dick Walters of Hazen and Sawyer to be on the lookout for the plant as we approached in the car. Mr. Ed Taylor, Mrs. Lena Payne and myself passed without even noticing it. In my personal opinion it was beautifully designed and landscaped. I see no reason why if Westchester County can beautify a small plant such as that, the City of New York cannot do so on a large scale.

s/ Richard Fitzsimmons
Sandhog Union

SEWAGE PLANT SITE AND PLANT INSPECTION

LENA PAYNE
Chairman
Sewage Committee
River View Towers

APRIL 24, 1968

It impressed us as singular that laymen, inexperienced in topography, building and engineering should have been asked to undertake the job of site selection and plant inspection which is so clearly the responsibility of the Sit Selection Board and the Department of Public Works. We acceded to this request only because we did not wish to close our lines of communication by default on our part. That is, we did not want any public officials before whom we previously have appeared to tell us they had given us an opportunity to look for sites and inspect plants and we had refused.

We inspected sites on April 17th and looked at existing sewage plants on April 18th. The sewage plant survey will be covered in another section of this report. The results of the site inspection were as follows:

The Inwood and Dyckman sites, which could be well-disguised and unseen because of high cliffs over-hanging the shore line were not in immediate proximately to residential areas. However, there were people in the park area. It would be our opinion that a plant in these two areas would deny the area residents use of valuable park lahd which we understood is used fully, particularly during the summer months. In addition, Hazen and Sawyer, engineers, found the Dyckman area the least efficient site for the sewage plant because of weak boring data and the most expensive to build.

The 143rd Street site, which is a ten block long primary and secondary treatmentplant, the largest in the entire State of New York, is only 400 feet at the closest point from a densely populated residential area. Desperately needed park space will be denied the resident and the character of the entire community will be changed, down-graded and ultimately disintergrate into slum -- a ghettoized area. Many people presently living here have made it very clear that they will not stay if a sewage plant is erected here. Many are professional people, doctors, lawyers, engineers, architects and technicians while many are professors in the City University system and Columbia University. Their loss will be an irreparable blow to this integrated community.

Surley, those who have been studying this problem know that the Hudson River at this point is closest to a residential area of any place along its meandering shore line. The plant is to be festooned with fountains and pools and general aesthetic accoutrements proposed by Mr. Philip Johnson at an additional cost of $12,000,000 to make it more palatable to the populace. The populace is not interested in these embellishments because they look upon them as an insult to their intelligence and an attempt on the part of the City to placate them for putting the plant here in the first place.

Hazen and Sawyer indicate in their 'Conclusions' on Page 13 of their report that "shifting the treatment plant from 143rd Street to 57th Street or 66th Street and modifying the interceptor to suit might reduce the North River Pollution Control Project by $4,000,000 to $9,000,000". Add this to the $12,000,000 niceties suggested by Mr. Johnson and you have a saving of $21,000,000 which almost offsets the $25,000,000 that a three year delay for redesign would create. No one has fully explained why redesign should take three years.

57th Street and the Hudson River, the site recommended by Hazen and Sawyer is 1100 feet from 11th Avenue. We have not had an opportunity to ascertain if 11th Avenue has any residents or is a commercial area. 57th Street and the River is an area of rotting piers, rotted pier up-right logs, unused loading platforms, New York Central freight trains and tracks, unused, dilipated storage buildings, a Consolidated building which is only partially used and a Marine Transfer Station. This is purely commercial area with not a house in sight. It has a tremendous truck traffic, mostly the large, cross-country variety. A plant at 57th Street would be the least expensive to build and, in all probability, at the very outset be more efficient than the 143rd Street plant which cannot hope for more than 66% efficiency at the best. Even that 66% is not guaranteed and will deteriorate rapidly in four or five years -- partially because of site limitations.

A most important aspect of the "57th Street site is that savings in sludge barging ranging from $15,000 to $100,000 per year would be equivalent to a reduction in initial expenditure of $200,000 to $1,500,000." It should be recognized that the sludge from 57th Street has to be barged a much shorter distance to the Atlantic than the sludge from 143rd Street site.

The 72nd Street site cannot be considered because it is now too small to do the job required.

In our conference with Commissioner Eugene Hult of the Department of Public Works, we were advised by the Commissioner that the City would lose $6,000,000 if it did not sign a contract on 4/26 to enable work to be started so that the sand hogs could begin working, Surely, we feel nothing but compassion and empathy for the sand hogs. However, if this contract is not signed and the City has to pay $6,000,000, as Commissioner Hult indicated, it will not be the first time or the last that this City spent sums of this size and larger on some project that did not materialize.

I wish to be permitted a personal observation. On December 15, 1967, I closed the final chapter on thirty-four proud years of tenure with the City of New York. My record is there for all to see--thirty-four years of above average and outstanding performance. My years of devoted service taught me that we should never lose sight of people. In these two and one half years that I have been involved in the sewage struggle, and with all the reports and engineering reports I have read, not once have I heard anyone talk about or write about people. One gets the strong impression that people in this City who are charged with the responsibility of working for the greater good for the greater number, are not people-oriented. In all discussions we have had the City authorities about this sewage plant, we strongly have gained the impression that everyone is proceeding with a great sense of urgency in order to qualify for State and Federal funds. This Federal and State deadline, which in all probability is more flexible than the City cares to admit, is causing our responsible officials to dash forward and start something, regardless where, and without regard for people in order to qualify for these funds.

Let me sum up. We are all agreed that the Hudson is polluted and must be cleaned and kept clean; it is mandated by law and socially desirable. However, regardless how badly it needs treatment and regardless of the happy prospect of State and Federal subsidy (Federal is questionable) this sewage plant should not be placed in **ANY** residential area, not just here, not just ours, but NO residential area. We smelled Owl's Head which was bad enough, but the stench which permeated the entire atmosphere at Coney Island on a clear, moderately cool, slightly windy day should not be visited upon dumb animals let along human being.

We strongly suggest and request that the 57th Street site be selected because it is not a residential area, it is a commercial area, it is a more efficient site and less expensive in the long run. The fact that it is not near a residential area will not cause an on-going community to become a slum.

s/LENA PAYNE
LENA PAYNE, Chairman
Community Relations Committee
River View Towers
Board of Directors

ADDENDUM I

April 22, 1968

Mr. Norman Nosenchuck
Assistant for Engineering Coordination
Construction Grants Activities
N .Y. State Department of Health
84 Holland Avenue
Albany, New York 112208

Dear Mr. Nosenchuck:

This letter is in followup to a call made to you by me on April 22, 1968 concerning the North River Water Pollution Control Plant.

As I said I am one of our members of a committee appointed by Borough President Percy Sutton on the recommendation of the New York City Board of Estimate, at its hearing April 4, We were charged with the task of reviewing with Hazen and Sawyer, engineers the alternate sites explored by them and any others suggested. A copy of the report is enclosed.

We would like to know:

1. Whether a new contract would have to be signed or whether the present contract could be amended to provide for a change of plant site.
2. Whether the contracts for intercepting sewers which are not to be changed due to plant relocation can be let now before completion of all the plans for the site.
3. How long could monies now committed for the plant in its present site be held while the amendments are being written.
4. What the state opinion is as to the best site as mentioned in the report.
5. What the state thinks especially of the 59th Street site and the resulting cooperation with the Pan American STOL-port for either part of the running or a parking garage.
6. What the state thinks would be a good estimate of new monies available for the site as a result of the changes.
7. Any other pertinent information.

We will report to the New York City Board of Estimate, Thursday, April 25, 1968, at 10:30 A.M. We would appreciate it if you could give us this information as soon as humanly possible son that we might inform the Board and thus contribute to its decision. My phone is 212/ 427-2450.

Thank you very much for your interest and consideration.

Yours truly,

Edward F. Taylor

cc: Mr. Frank Baraff, Borough President's office
Lena Payne, Riverside Cooperative
Richard Fitzsimmons, Local 147 AFL-CIO

Statement Prepared for the Board of Estimate, Capital Budget Hearing, City Hall, February 13, 1968.

In this, the Twentieth Century, the practice of disposing of raw sewage by allowing it to flow untreated into the Hudson River, appears to be an unscientific and primitive expedient. The intimate components of human waste can be seen, felt and smelled upon the River itself and upon adjacent land and connected bodies of water. Both fish and people find the polluted water untenable. However, let us ask ourselves, "Is human waste the major source of pollution?" The answer is that industrial waste contributes much more poison to the river than does the refuse of residential areas.

The mass of air above the River is replete with contaminants which also can be seen, felt and smelled. These products of industrial waste and the incomplete combustion of organic fuels are also toxic. Our practice of contaminating the atmosphere is also out of step with Twentieth Century science.

In mandating that a sewage treatment plant be constructed on the lower Hudson from 137 to 145 Street, the City of New York has given its residents hyper-toxic air as a substitute for an out dated sewage disposal system. The advantages of this substitution are dubious.

What of the unseen, unfelt and unsmelled? Sophisticated instrumentation reveals that both water and air are contaminated by microorganisms and toxic chemical substances all of which are capable of, at the least, shortening the lives of significant numbers of our citizens.

Filtration of raw sewage will remove many of the microorganisms, but not all of them, by any means. Spraying the aqueous filtrate into the atmosphere from fountains will introduce microbial aerosols which air currents can carry for considerable distances, thus contaminating large areas of the city with possibly contagious disease. The argument that treatment of the aerosols with ozone will eliminate this threat is ridiculous in light of the well-established fact that ozone is extremely toxic to humans, as well as microorganisms. Again, we find a worthless substitution of chemical poison for microbial disease. Bear in mind that an infection is much easier to treat than the extensive physiological damage done by a poisonous gas. We all react with shock at the news of a chlorine-laden ship in danger of releasing its cargo. Why then do we propose to legally release ozone, a gas at least as toxic as chlorine and one of the most dangerous pollutants in the notorious Los Angeles atmosphere? Are we unaware that the toxic effects of ozone are increased by exercise when the pallative of playgrounds for our active children right at the site of the sewage plant is offered us?

Must the life of this city and of its inhabitants be governed by expedient reaction to emergency situations rather than long-range planning? You require health, comfort and even luxury of science. Yet, you spend money on the renovation of Riverside Park with one hand, and allow the trees to be killed with the other. Many of us will miss the gulls and other birds which will disappear as we now miss the fish which once were abundant in the Hudson. No man-made structure can substitute for the already disrupted design of a far greater architect, one who has given us the power not only to destroy all other living things, but our selves, as well.

This is a plea for a more rational approach to problems generated by masses of people living together in confined quarters. What we need is thought and planning, not irrational compromise. You expect much of science. As a scientist, I hope it is not too much to expect a responsible approach to problems of public health and welfare from those who have been elected to serve the entire community, not a particular segment of it, or their own self interest.

M. A. Benjaminson, Ph. D.
Microbiologist, U. S. Navy

P. O. Box - 245
Barnegat Light, New Jersey
- 08006 -
23 - June - 1968

Mr. John S. Farlow
Regional Co-ordinator : National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey - 08817

Dear Mr. Farlow:

Thank you very much for the letter and the enclosures on the Estuarine Pollution Study and the hearing in New York on July 23rd. I am afraid that it is highly improbable that any members of our little group, the Long Beach Island Conservation Society, will be able to attend, but we will be most happy to submit a written statement for the record. This we cannot send to you immediately, since there is a certain amount of research which has to be done, but we will get it in to you by August, and we are very happy to have the chance to make our views known.

However, without being too precise at this point, I think that it is safe to say that most of the bay frontage of Long Beach Island and much of the estuarine area of Barnegat Bay, Manahawkin Bay and Little Egg Harbor has either already been pre-empted by laggon-type development or will be so occupied in the very near future. Many of the best clamming beds have already been ruined, and there has been a noteable decline in fishing throughout the region. Much pollution has been created, and some areas have had to be closed to bathing and shell-fishing. I very much fear that the picture is not a happy one, despite the efforts of the Department of Interior and the State of New Jersey in buying up strategic areas for wildlife preserves.

Much of the problem comes down to the issue of local control and the placing of reasonable restraints on estuarine development. Very, very few communities along this coast have such control, and, unless such control is required and enforced, I am afraid that the only answer to the problem is wholesale acquisition of the wetlands.

Very truly yours,

A. Jerome Wa

A. Jerome Walnut : President
The Long Beach Island Conservation Society

The Association of Interpretive Naturalists, Inc.

For the advancement of education and the development
of skills in the art of interpreting the natural environment.

1400 Glenallen Avenue
Wheaton, Maryland 20902
June 27, 1968

Mr. John S. Farlow, Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Mr. Farlow:

Please include this statement in the record of the public meeting on the pollution of estuarine waters to be held in New York City on July 23, 1968.

This organization, representing the professional interests of over 500 naturalists employed in the public service, wholly supports every effort which can produce a more sanative environment.

We are especially concerned for watersheds terminating in coastal estuaries, recognizing the delicate balance in water chemistry necessary to the wealth of biological life found in these transition zones between fresh and marine waters; and we trust that current studies will result in enforceable standards with respect to estuarine pollution levels.

We suggest that studies demonstrate to the people and to the Congress, in dollar value, the wealth of the estuarine waters. In addition to measurable values of sport and commercial fisheries, we propose - for comparison - an arbitrary figure for daily recreation use, based on average charges paid for similar outdoor recreation opportunities. We feel that it will be necessary to dramatize the potential economic wealth of sanative estuaries, coupled with esthetic values and the potential for education and scientific study. As a practical matter, we suggest that sorely needed management dollars will only come when dollar values are clearly demonstrated.

We would like to see the stewardship for sanatizing estuarine waters, including inland watersheds and the coastal shelf, shared by the States and the Federal government; with uniform standards for management in every region concerned. We further believe that successful programs will depend on the fullest cooperation of industry and commerce, and of local political sub-divisions.

Sincerely,

Stanton G. Ernst
President

Tel. 664-5300 Code 201

A non-profit
public service organization

YACHT SAFETY BUREAU
INCORPORATED
336 OLD HOOK ROAD, WESTWOOD, N. J. 07675

21 June 1968

Mr. Lester M. Klashman, Regional Director
U.S. Dept. of the Interior
Federal Water Pollution Control Administration
John F. Kennedy Federal Bldg.
Boston, Massachusetts 02203

Subject: National Estuarine Pollution Study,
Meeting - 23 July 1968

Dear Mr. Klashman:

Thank you for your 10 June letter inviting me to participate in the public meeting set for 23 July 1968 on the impact of pollution on coastal and estuarine waters.

The plans for the meeting certainly indicate it should be interesting, and informative. I will plan to attend or have the Yacht Safety Bureau otherwise represented.

The objectives of the meeting seem to be somewhat removed from the chartered prerogatives of the Bureau and hence I will not prepare a written statement. As a real brief on the Bureau - it is operated exclusively for "testing for public safety" as that term is defined in the IRS code. Hence, for water pollution control devices for use aboard boats, the Bureau's area of operation is the development of and accomplishment of testing procedures that confirm the capability of devices or systems to comply with established objectives.

A couple of months ago, I was privileged to make a statement for the Sub-Committee on Air and Water Pollution of the U.S. Senate Committee on Public Works. A complete copy of that statement is enclosed. It sets forth the activities of the Bureau with respect to pollution control devices and I could not add much to it at this time.

Sincerely,

E.S. Terwilliger, Exec. Vice-Pres.

YACHT SAFETY BUREAU, INC.

EST/w
enc: Statement on Air and
Water Pollution

STATEMENT FOR - SUB-COMMITTEE ON AIR AND WATER POLLUTION
SENATE COMMITTEE ON PUBLIC WORKS

3 APRIL 1968

BY - E. S. Terwilliger
Exec. Vice-President,
Yacht Safety Bureau, Inc.

Mr. Chairman, members of the Sub-committee, it is an appreciated privilege to present this statement on the activities of the Yacht Safety Bureau, with particular reference to water pollution control devices for use aboard boats. For your understanding of those activities, it is important that you know what the Bureau is, what it does, and how it operates. For that, as well as brevity herein, a copy of a descriptive pamphlet, entitled "Testing for Safety Afloat" is attached as a part of this statement.

The paragraphs in quotation marks on Pages 1 and 2 of the pamphlet comprise the Bureau's complete Certificate of Incorporation. In few words, that charter defines the Bureau's program, stresses devotion to the public interest, emphasizes the marine environment, confines program scope to the product phase of marine safety, and sets forth the basic process for implementing the program. Further procedural guidance stems from a 1963 ruling of the Internal Revenue Service exempting the Bureau from Federal taxes as an organization operated exclusively for "testing for public safety" as described in

Section 501(c)(3) of the IRS code. The purpose of the imposed procedural guidelines is to make certain the Bureau's product evaluation services are in the public interest and fair to all.

The IRS ruling was in part premised on the condition no part of Bureau operation was devoted to carrying on propaganda. Specifically related to that restraint is the avoidance of any attempt to influence legislation. To live completely with the spirit and word of that restraint the Bureau has not and does not express opinions on what product safety matters should or should not be regulated. However, I want to equally stress that, for such product safety matters as are now, or may be, the subject of regulations, the Bureau's evaluation operations can, and it is hoped they will, aid authorities charged with their administration.

The essence of Bureau operation is provision of an independent, uniform, reliable, and impartial marine product safety evaluation and certification service for the boating field. This is ensured by careful adherence to the procedural guidelines, plus keying evaluations to illustrate compliance with:

1. The advisory safety standards established by organizations like the American Boat & Yacht Council (ABYC) and the National Fire Protection Association (NFPA) in which all interested parties may participate; or

2. Applicable government regulations.
It is worth stating that the organizational separation of advisory safety standard development and safety evaluation avoids any aspect of "self-certification".

The foregoing fixes the Bureau position with respect to regulations that may be established to control pollution from pleasure boats. The Bureau can, as a "testing for public safety" organization, develop and accomplish testing procedures that illustrate capability of devices or systems to comply with established objectives. This is the area of considerable past and current Bureau activity.

The ABYC was formally organized in 1954 for the single purpose of developing advisory safety standards for physical features of boats and their equipment through procedures permitting all interests concerned to participate. I was active in its formation and privileged to serve as its administrator until 1962.

In 1957, under the impulse of several annual conferences jointly sponsored by the New England Interstate Water Pollution Control Commission and the National Association of Engine & Boat Manufacturers, the ABYC was asked to develop "recommended practices and standards for sewage treatment devices for marine toilet waste, including their installation". That request was accepted. A committee blending industry, governmental, and professional participation was formed. The committee developed a proposal in time for the January 1959 joint conference. The proposal was commended by that conference and later in the same year adopted by the ABYC as an advisory standard. It was amended in 1961, to include a recommended space allowance for installation of the devices aboard boats. A copy of that standard is attached, and a perusal will reveal:

1. It refers only to devices designed to treat human waste by the maceration-disinfection method to permit overboard discharge.
2. It states effluent and safety requirements in terms of objectives to be attained.

At the time the development of this standard was undertaken, only one device of the type was available to the best of my knowledge. The manufacturer had been working with the biology department of Wesleyan University and the Water Pollution Commission of the State of New Hampshire. Sanitary engineers of that commission undertook effluent testing of devices to help implement a state regulation prohibiting toilets aboard boats unless equipped with an approved sewage treatment device. The effective date of that regulation was originally set for the boating season of 1959, and I believe was a first.

During this period, various states were considering regulations to control pollution from boats. The ABYC standard provided guidance for them as well as for several manufacturers interested in developing devices of the type.

I should mention that while retention tanks were considered at the time as a method of pollution control, it was not pursued for standard development, because of space requirementsaboard and the absence of shore side services. I should also mention that the effluent requirements for the macerator-disinfectant class of device, as stated in the original ABYC standard have not been changed. Those requirements are that an effluent be free of unsightly solids and contain coliform bacteria not exceeding an MPN (most probable number) of 240 per hundred ML (milliliters). This more than met the minimum waste treatment recommended by the Federal Inter-departmental Committee on Sewage and Waste Disposal from Vessels with respect to vessels carrying relatively few people (40 or less).

With the adoption of the ABYC standard, the regulatory efforts by several states, and the growing interest by manufacturers, the problem of measuring the capability of proprietary devices to meet the requirements emerged. This virtually coincided with the commencement in 1962 of the Bureau's evaluation testing of products intended for use aboard boats, and the Bureau was requested by several manufacturers to test their devices. For on board safety aspects of the devices there was no doubt such testing was appropriate under the Bureau's charter. Counsel's opinion was sought with respect to the bacteriological examination necessary. The pertinent part of that opinion reads:

> "This represents a slight departure from prior programs in that you will be concerned not only with hazards to the boat so equipped, but also with the hazard of water pollution (i.e. whether the device is efficient for its purpose of preventing or minimizing pollution of surrounding waters). We believe that this is clearly permissible under your charter. Water pollution constitutes a hazard to all who use pleasure boats and to all who are in areas where pleasure boats are used. Your concern with efficiency in this instance is directly related to a recognized hazard."

Accordingly, in early 1963, the Bureau undertook the development of a complete testing procedure for marine waste treatment devices as a basis for confirming compliance with the performance objectives in the ABYC standard. That testing procedure was progressed to initial form by the fall of 1963. For the parts having to do with bacteriological testing, the Bureau is particularly indebted to the assistance of sanitation engineers of the New Hampshire Water Pollution Commission; The Interstate Sanitation Commission for New York, New Jersey and Connecticut; to the Director of the American Biological Control Laboratories, Tenafly, New Jersey, who serves as the Bureau's consultant, and to many direct discussions with state and federal public health officials. The testing procedure was distributed to authorities in all fifty states and to the U.S. Public Health Service. No unfavorable comment was received.

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Subsequently, the Bureau had many opportunities to test macerator-chemical devices. When effluent results were determined in strict accordance with the prescribed tests, the indications were such as to invite further exploration of the basic concept. For this several manufacturers submitted modified or pilot models. The Bureau accumulated both data and testing experience, but no device was listed and labeled.

In 1966, the National Association of Engine & Boat Manufacturers, requested the Bureau to undertake effluent tests of all available production or pilot models of the macerator-chemical type of devices intended for boat usage. The Bureau agreed on the basis it would be consistent with Bureau practices in establishing and confirming testing procedures for evaluating devices. The NAEBM obtained the cooperative loan of seven (7) production and four (4) pilot models of proprietary devices. They were operationally tested during the summer of 1966.

General observations from the accumulative effort to this point can be stated as:

1. Maceration must be virtually complete - the presence of practically any human waste solids in effluent prevents attainment of the required coliform bacteria level.
2. The disinfectant input should be consistent and sufficient in volume.

3. The overall operating period per device use must be adequate and is related to the above factors.

If these conditions are met, the established effluent objectives can be attained.

In January 1967, the Bureau issued its first authorization for the listing and labeling of a proprietary device of the macerator-disinfectant type.

During the period covered by the foregoing, there were no established guidelines in the form of advisory standards for human waste control systems using retention or incineration concepts aboard boats. These concepts are currently receiving rather intense attention by advisory standard preparing organizations. The concepts have been specifically referred to in regulations adopted by several states with some going so far as to emphasize their use by complete prohibition of any sewage discharge from vessels.

The relatively recent legislation by the State of New York requires that every vessel equipped with a toilet and operating on waters of that State must have provisions for retaining, treating, or destroying human waste. The legislation also requires that devices used for the purpose must be approved by the Departments of Health and Conservation of the State of New York. In early 1967, the Yacht Safety Bureau was honored by a request by the Division of Motor Boats of the Conservation Department to assist it and the Health Department in establishing evaluation standards for the classifications of devices upon which the required approvals could appropriately be based. The Bureau accepted this obligation.

All manufacturers known to be producing holding tanks, recirculating toilets and incinerators were solicited for the loan of production samples for examination, study and exploratory testing. It was specifically understood the effort and its results would not under any circumstances constitute an evaluation of the particular devices by either the Bureau or the State authorities. By mid-year, two (2) incinerators, three (3) holding tanks, and three (3) recirculating flush toilets were received. The physical work for this effort is substantially complete and the report for the State of New York is under preparation. With that report the Bureau is required to submit the evaluation standards in ready to use form. Accordingly, they are being prepared through the process described in the attached pamphlet for the development of all the classification standards to which Yacht Safety Bureau evaluations of particular marine products can be related. The titles for these classification standards are:

YSB Standard E-21 - "Requirements for Marine Waste Treatment and Disposal Devices"

YSB Standard E-45 - "Requirements for Retention Assemblies for Sewage"

YSB Standard E-49 - "Requirements for Marine Recirculating Assemblies for Human Waste"

YSB Standard E-52 - "Requirements for Marine Sewage Incinerating Devices"

In their preliminary proposal form copies of each have been circulated for comment to the following:

1. The manufacturers who cooperated by lending devices.
2. Other manufacturers whose addresses were known.
3. The boating law administrators in all fifty (50) states.
4. The Division of Technical Services, Federal Water Pollution Control Administration Department of Interior.
5. The Bureau's Operations Committee, which includes U.S. Coast Guard participation.

The proposal designated E-21, having to do with the macerator-chemical treatment classification is a revision of the evaluation standard established earlier. The major revision is the inclusion of evaluation of provisions making the devices inoperative when the disinfectant input is inadequate. This is the only one of the classifications involving a bacteriological examination of effluent and it has just recently been directly reviewed with the Health Department of the State of New York.

In preparing the proposals, the Bureau referred to present related advisory standards, including factors under consideration for their revision, and various state regulations. The proposals are currently being revised to reflect consideration of comments received. As revised they will be submitted to the Operations Committee for its judgment of their suitability as a basis for evaluating proprietary devices and the listing and labeling of successfully evaluated devices.

Because of their present status I have not included copies of the proposals as a part of this statement. Early approval of them by the Operations Committee is hoped for and, as that is attained, I will be glad to see that copies reach you.

It is universally recognized that uniformity of advisory standards and of regulations, if regulations are necessary, is a vital need. That need is particularly emphasized for the boating field for which the maintenance of freedom of mobility is so desirable. It follows as necessary that testing procedures, as well as the accomplishment of them, be uniform. The legislation you are considering deals with both basic regulations and their implementation by means of testing. With the example of the control of water pollution from vessels as pertinent to your present concern, it is my hope I have conveyed to you:

1. An idea of very heavy Yacht Safety Bureau efforts, both past and continuing, on the problem.
2. A picture of a dedicated, meaningful, practical, and fair program for marine product safety evaluation and certification for the boating public.

I thank you for this opportunity and my statement is respectfully submitted to you.

*

Attachments: Pamphlet - "Testing for Safety Afloat"
ABYC Standard A-8, January 5, 1961

TESTING FOR SAFETY AFLOAT

YACHT SAFETY BUREAU, INC.
NON - PROFIT PUBLIC SERVICE ORGANIZATION

DECEMBER 1966

YACHT SAFETY BUREAU, INC.

SPONSORING MEMBERS

National Association of Engine and Boat Manufacturers, Inc.
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The Commandant — United States Coast Guard

YACHT SAFETY BUREAU, INC.
336 Old Hook Road
Westwood, New Jersey 07675

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TESTING FOR SAFETY AFLOAT

Organization Of The Yacht Safety Bureau

Founded in 1947 to advance the basic safety of pleasure boats and their equipment, the Yacht Safety Bureau, Inc., was completely re-organized in 1959, under the joint and equal sponsorship of the National Association of Engine and Boat Manufacturers, Inc., and the major marine underwriters. The Bureau is chartered under the Membership Corporation Law of the State of New York as a non-profit organization and it is exempt from Federal income taxes by ruling of the Internal Revenue Service. The Certificate of Incorporation provides that:

> "No distribution of any of the property, assets or income of the corporation, however or wherever acquired, shall ever be made to or among its members either by way of dividends, or distribution in liquidation or otherwise, but all of its property shall be considered and deemed to be and is dedicated to the accomplishment of its objects and purposes. In the event of dissolution of the corporation, its property and assets shall be transferred to another organization in furtherance of the purpose of testing for public safety in the field of pleasure boating, such other organizations to be chosen at a corporate meeting held for that purpose, subject to the order of the Supreme Court as provided by law."

Purpose And Activities

All activities of the Bureau are conducted in furtherance of its primary purpose, stated in its Certificate of Incorporation as follows:

> "The purpose of this corporation is testing for public safety in the field of pleasure boating and any and all other corporate powers and activities shall be and are in pursuance of this purpose or incidental thereto.
>
> "The corporation shall accept for inspection, testing and safety evaluation products intended for use on, in or in connection with small boats, primarily pleasure boats, including hulls and entire boats, and shall report and circulate the results of such inspections, tests, and evaluations to the public and/or interested parties, by provision

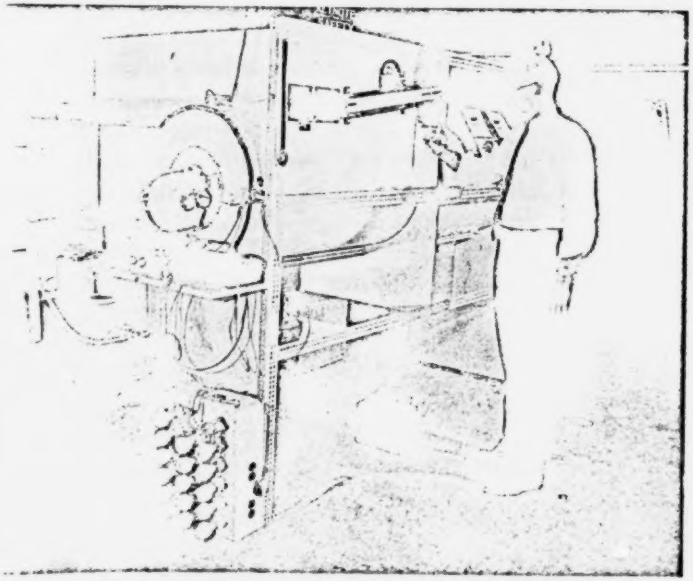
for the attachment to such products of labels or certificates, or by such other means as from time to time may be deemed appropriate.

"The corporation shall cooperate with and assist the Commandant of the United States Coast Guard in matters relating to pleasure boat safety.

"The corporation shall ascertain and define standards and classifications of materials, devices and methods bearing upon small boat safety against which particular items may be tested and evaluated.

"The corporation may acquire by any appropriate means laboratories and testing stations and the necessary equipment therefore, wherever situated; for the purpose of carrying on its primary activity and purpose.

"The corporation shall have such other powers as may be implied by law to the extent only that such powers shall be appropriate and necessary to its purpose of testing for public safety in the field of pleasure boating."



Recording Data for Test of Ventilating System Components

Simply stated, the objective of the Bureau is to see that marine equipment that has been measured for its safety of operation, when used as intended, is available to the boating public. The objective is based upon the logic that safety begins with safe products and continues with how they are used. To accomplish the objective in acceptable fashion, the Bureau is basically similar in concept, organization and operation to Underwriters' Laboratories, Inc. The Bureau stands today as a carefully defined organization devoted to the practical accomplishment of a public service without profit for anyone. For this, appreciation is due to the Bureau's sponsors, to the United States Coast Guard, to Underwriters' Laboratories, Inc., and to many many men associated with boating as an industry and as a recreation.

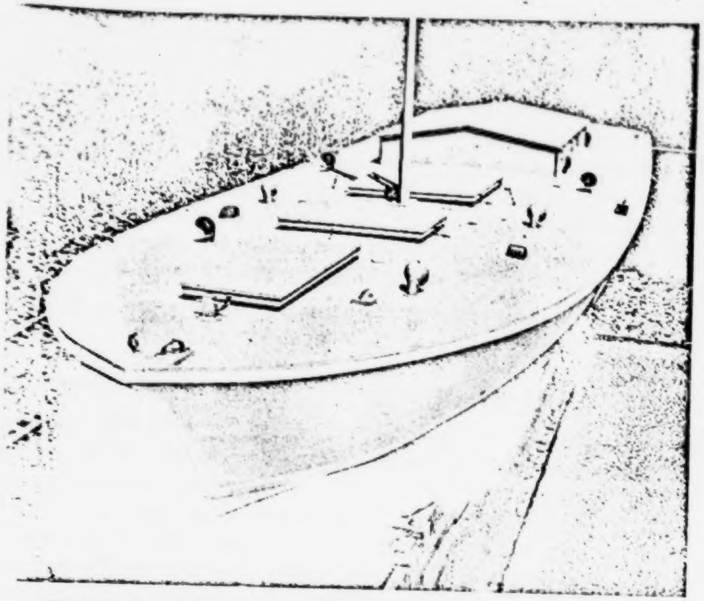
Administration

General authority to deal with all matters pertaining to the activities of the Bureau is vested in its Board of Directors. That Board is comprised of fourteen men with representation equally divided between the sponsoring marine underwriters and the National Association of Engine and Boat Manufacturers, Inc. Officers elected by and from the Board are the President, First Vice-President and the Treasurer. These officers serve without any compensation as do all Board members. The active, day-to-day, management of the corporation is the responsibility of the Executive Vice-President, who, along with the Secretary, is appointed by the Board.

The supervision of matters pertaining to safety testing is vested in the Operations Committee subject to final approval of the Board. This Committee is composed of technically qualified men from key parts of the industry and the United States Coast Guard. Its function is to render judgments on all testing requirements developed for use by the Bureau and on all test reports that include recommendations for product listings.

Facilities

The administrative office and initial testing station is at 336 Old Hook Road, Westwood, New Jersey. Here considerable capacity is in being and steadily being expanded for extensive physical testing of variou classifications of marine equipment. Acquired or specially designe machines vibrate, rock, shock, burn, freeze, twist, pound, squeez



Environmental Exposure Hull Ready for Launching in Southern Waters

d impart other forms of simulated environmental stress to products bmitted for safety evaluation. Testing involving waterborne operas, atmospheric exposure, or exposure to fire is conducted outside e Bureau's present station and the examination and tests for some roducts or systems may be made at a manufacturer's plant.

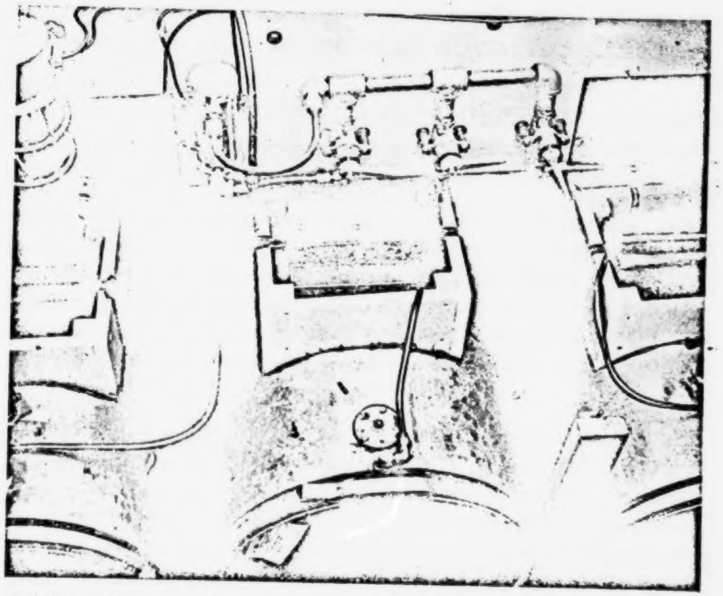
rranging For Tests

he Bureau does not solicit any work. A manufacturer desiring a fety investigation, a report, and a listing of his product may address e Bureau at its administrative office. He is expected to provide a mplete description of his product for a preliminary study to classify , and at least in a general way, to determine the probable nature d extent of the evaluation work. If a Bureau standard has been tablished for the product concerned, setting forth the minimum truction and performance requirements to which it would be ted, the submitter is given a copy of it.

It is expected that the entire evaluation procedure projected for any product will be thoroughly discussed with each submitter by correspondence or by direct interview. When complete understanding is reached regarding limitations of the responsibility of the Bureau, the work to be performed, the preliminary deposit, cost limit, test samples needed, time required, and the inspection service to be established if the product is found acceptable for listing, an application form covering these details is sent to the interested manufacturer. Manufacturers may make appointments to witness particular tests of their product, if desired.

Bureau Standards

The Bureau's standards, prepared and under development, are intended to set forth minimum requirements for the construction and performance under test of various devices, materials, systems, and appliances, offered for use in the field of pleasure boating. A primary purpose of the Bureau's standards is to assure that all manu-



Fuel System Components Installed in Environmental Exposure Hull — Ready for Test facturers of the same class of product may have their products evaluated for safety in the same way. Wherever it is practical to do so, the standards are based upon and designed to implement the advisory codes of the American Boat and Yacht Council, Inc., the National Fire Protection Association, and the regulations of the United States Coast Guard.

All standards are developed with the cooperation of representative manufacturers. The requirements are based on sound engineering principles, research, field experience, records of tests, and on consultations with manufacturers, users, inspection authorities, the United States Coast Guard, and others having special training or experience. They are subject to revision as changes are made in advisory codes or regulations, or as additional experience and investigation indicate.

Established Bureau standards are available on request without charge to interested manufacturers.

Test Reports

At the conclusion of any tests undertaken pursuant to an application, the submitter is advised of the findings. If these disclose objectionable features they are discussed only with him for they must be corrected and revised samples found acceptable before listing and labeling can be recommended. When the results of the investigation are such as to warrant a recommendation for listing, a complete report is prepared. It is reviewed with the manufacturer and submitted to the Bureau's Operations Committee for approval.

Additional copies of test reports are available to submitters at cost.

Listing And Labeling

Listing of a product, with its related privilege of the use of the Bureau's label, means that production samples of it have been evaluated and found acceptable under the Bureau's requirements for the class. Listing is an expression of the Bureau's good faith opinion, based on tests, that the item meets minimum applicable safety standards. It is not a warranty of quality or performance, nor are listed products of the same class necessarily equivalent in quality, performance, or merit.

Product listings are currently promulgated on printed cards. Copies of these cards are furnished to the sponsoring underwriter members; to the members of the National Association of Engine and Boat Manufacturers, Inc.; to such associations as the American Boat and Yacht Council, Inc.; the National Fire Protection Association; United States Salvage Association; the Society of Small Craft Designers; the United States Coast Guard; the National Association of Marine Surveyors and the United States Coast Guard Auxiliary. Several copies of each Listing Card are given to the submitter, who can obtain additional copies at cost.

Only commercially available products are eligible for a listing. Products may be submitted in their model stage for evaluation in relation to applicable safety requirements and reports made to the submitter for guidance. Such evaluations do not commit the Bureau to listings, which can only be determined when the products are in commercial form and are submitted for final examination and test.

Continuity of a Bureau listing is provided for by means of its periodic inspection service. This is directed only to confirming that originally tested qualities of listed and labeled products are maintained so long as the listing continues.

The Bureau's labels include the words "LISTED PRODUCT". They may be of any material adapted to the product, but are obtainable only from the Yacht Safety Bureau, Inc., and remain under its control. This condition is a contractual agreement included in the application for product evaluation.

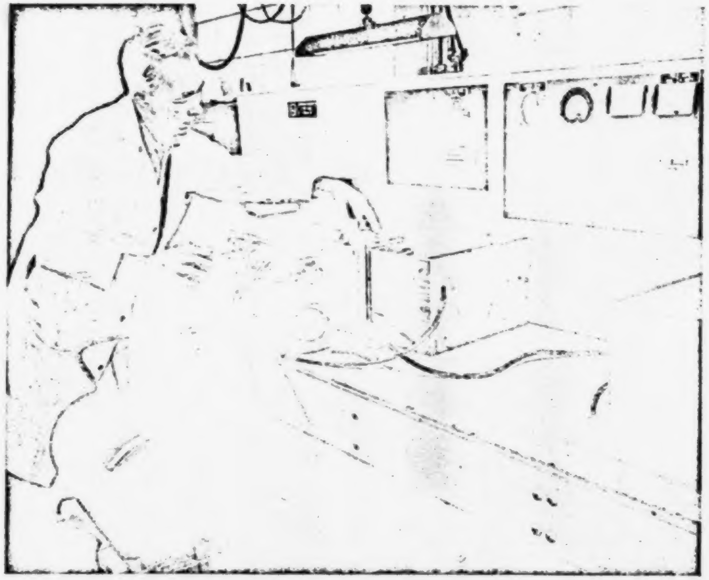
Costs Of Tests And Services

Bureau charges to manufacturers who make use of its services and facilities are principally of two kinds with both based upon actual work expended. One relates to all materials, staff time, travel, and any other element, including preparation of the report that enters into the cost of performing the work necessary for a complete product investigation. The other has to do with the inspection service. Both are thoroughly discussed with manufacturers and agreed upon at the time of arranging for tests.

Other charges have to do with labels, the Listing Cards, additional copies of test reports, etc. These are provided at the nominal cost of printing, plus the overhead of handling.

Acceptance Of Bureau Listings

The organization, purpose, and formal operating procedures of the Bureau have been so determined and defined as to warrant the greatest degree of acceptance of Bureau findings by all concerned, including governmental agencies, the boating industry, marine underwriters and the pleasure boating public. The Bureau, however, does not warrant or guarantee that its findings will be recognized or accepted in any individual case. Recognition or acceptance rests with the authority having jurisdiction.



Engine Fuel Pumps Being Set-Up for 500-Hour Operating Test in Heat Chamber

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AMERICAN BOAT AND YACHT COUNCIL, INC.
420 Lexington Avenue
New York 17, New York

STANDARDS AND RECOMMENDED PRACTICES FOR SEWAGE TREATMENT DEVICES FOR MARINE TOILET WASTE, INCLUDING THEIR INSTALLATION

Project A-8

1. SCOPE

These recommended practices or standards apply to devices designed to treat human waste discharged through marine toilets for pollution abatement as may be required by appropriate regulatory agencies.

2. DEFINITIONS

The following terms are defined for purposes of this section:

a. Most Probable Number (MPN) - A statistical measure of the number of coliform organisms present and indicator of the degree of pollution from human sources.

b. Detention Time - The time or period that the sewage is retained in the device.

c. Septic Action - The biological decomposition of organic matter in the absence of air accompanied by the production of unpleasant odors.

NOTE: A more precise and technical treatment of these definitions may be found in "Glossary Water and Sewage Control Engineering" prepared by Joint Committee representing American Public Health Association, American Society of Civil Engineers, American Water Works Association, Federation of Sewage Works Associations.

3. EFFLUENT REQUIREMENTS

A sewage treatment for marine toilets should discharge an effluent meeting the following minimum standards:

a. Free of unsightly solids.

b. Meeting the minimum requirements of regulatory agencies, or containing a most probable number (MPN) of coliform bacteria not exceeding 240 per hundred millitiers (ML).

4. PRETREATMENT OF SOLIDS

Prior to disinfection, solids shall be sufficiently divided into fine particles to permit the required degree of disinfection necessary to meet the minimum effluent standards set forth in Paragraph 3.

5. DISINFECTING AGENT

The disinfecting agent shall meet the following conditions:

a. Be easily obtainable.

b. Constitute minimum hazard when handled or stored and form no dangerous gases.

c. Be sufficiently effective in relation to the detention time of the device to meet the effluent requirements set forth in Paragraph 3.

6. MATERIALS

a. Materials used shall be such as to withstand the corrosion effects of the sewage, the disinfecting agent and the flush water.

b. Materials used should have chemical and/or galvanic compatibility.

7. DESIGN AND CONSTRUCTION

The device shall:

a. Be of ample strength for safe operation.

b. Incorporate a detention chamber of size sufficient to produce an effluent which complies with the requirements set forth in Paragraph 3.

c. Be of the type which does not depend on septic action as part of its treatment.

d. Prevent the escape of dangerous gases or obnoxious odors to boat interiors.

e. Provide for ease of cleaning, ease of maintenance, and ease of replenishment of the disinfecting agent.

f. Function automatically with the operation of the marine toilets.

g. Not require too frequent replenishment of the disinfectant.

8. INSTALLATION

a. Installation of the device and its piping should allow ease of servicing and replenishment of the disinfecting agent.

b. The device shall be adequately secured independently of any connecting piping.

c. All piping shall be sufficiently strong and durable to withstand any pressure that might be imposed upon it by normal operation of the device.

d. Materials of the connecting piping shall meet the requirements of Paragraph 6.

e. Subject to the foregoing, it is recommended that:

(1) Boat designers and manufacturers, in planning toilet installations, provide a space of not less than 24 inches in length, 14 inches in width, and 17 inches in height for the installation of a device.

(2) Overall dimension of toilet and device should not exceed 4 feet and the length of hose connecting toilet to intake of device must not exceed 3 feet.

January 5, 1961

STATEMENT ON IMPACT OF POLLUTION ON OUR COASTAL WATERS

My name is Donald J. O'Connor. I am a professor of civil engineering at Manhattan College in New York City and I am a member of the engineering firm of Hydroscience in Leonia, New Jersey. In these capacities, I have had the opportunity to work on both the theoretical and applied aspects of water quality and pollution analysis of the Delaware Estuary, as well as estuaries in other parts of the country and the world.

The following comments are related to manner and sequence in which pollution abatement procedures should be implemented, assuming the best uses of the estuary and the associated quality criteria have been established.

End products from man's activities are never eliminated from our environment. As these products pass through the ecological and hydrological cycles, they take on different forms which may or may not be regarded as pollutional. The modification of the acquatic environment as it may be affected by the present technology of pollution abatement simply sets the stage for the next step in the ecological cycle. From the pollution considerations and quality goals, the cycle is completed when we learn to use end products or when these products are returned and incorporated into our mode of life as something useful or at least innocuous. With our present state of technology, pollution is modified and adjusted so that it is at least tolerable; it should, in addition, be redirected and managed so that it may be lived with. "The total recycling of everything, " is the guide line to be followed.

A sequential approach to the problem of estuarine pollution is therefore recommended: Immediate implementation of the first stage in pollution abatement (currently interpreted to be about 85% BOD removal of carbonaceous oxygen demanding waste), subsequent observation of the changes and improvements which occur in the estuarine waters, and simultaneous planning for the next stage or level of the problem, the magnitude of which it will then be possible to quantitize more rigorously and evaluate more realistically. Our present state of technology is such that it can competently handle the first phase of this program, but it is inadequate to cope completely with the overall task. Advances are being made and, in the near future, they will be available in technologically functional fashion. In the interim, between recognition of the problem and its scientific and engineering solution, the time should be used for assessing the effect on environment of the most recent facility constructed to abate pollution. Assessment of the changes which occur at each step will then permit the bases to be established for the next. In those areas in which there is sufficient understanding of the total cycle, complete and long-range plans can and should be made. On the other hand, if the anticipated or desirable changes are not fully predictable, then the measurement and assessment of these changes are essential after each significant phase is complete.

WESTCHESTER COUNTY SOIL AND WATER CONSERVATION DISTRICT

CARLO M. PATERNO, CHAIRMAN
50 MAIN STREET, MOUNT KISCO, NEW YORK 10549

MRS. BAYARD READ
HON. CYRUS W. RUSSELL
HON. DANTE E. SPADACCIA
MRS. THOMAS N. WALLER

June 28, 1968

Mr. John S. Farlow
Northeast Region
Federal Water Pollution Control Administration
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Gentlemen:

The Board of Directors of the Westchester County Soil and Water Conservation District appreciate this opportunity to register their endorsement and support of the forthcoming National Estuarine Pollution Study now being prepared by the U. S. Department of the Interior. We believe that this study is an important step in the development of an orderly plan for the preservation and rational use of the nation's estuarine resources, particularly those that are threatened by the tremendous pressures for development in the urban areas boarding Long Island Sound.

Westchester County has experienced phenomenal growth during the past two decades. Increasing industrial use of the county's Long Island Sound shoreline has had a noticeable impact on the estuarial ecology of the area. Because the estuaries and estuarial zones of Westchester County are considered to have a unique natural character that is worthy of protection, the directors of the Westchester County Soil and Water Conservation District wish to record at this hearing their full support of the National Estuarine Pollution Study. Furthermore, the District Board particularly endorses those research efforts which will focus specifically on the management of thermal waste waters and marine and boat pollution as they affect the ecology and recreational use of Long Island Sound waters.

To facilitate such research, the district directors wish to assure the Federal Water Pollution Control Administration of their continuing cooperation, and will make available to the Administration the full resources of the district.

Very truly yours,

Carlo M. Paterno
Chairman

CMP:JB

527 Adams Street
Centerport, New York
July 18, 1968

Mr. John S. Farlow
Regional Coordinator, National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey

Dear Sir:

I regret that I will be unable to attend the meeting on July 23, but I would appreciate it if you would give very serious consideration to the following.

In New York State our problem is overlapping agencies in regard to the marine environment. The New York State Conservation Department is the agency responsible for certifying the waters from which shellfish may be safely harvested. It is also responsible for patroling uncertified areas. However, to get action against the polluters of our marine district, it can only report the sources of pollutants to the local health authorities. Our feeling is that this procedure shouls be changed so that the agency responsible for policing and for either certifying or non-certifying our waters should also have the authority to take action against the polluters.

Here in Huntington, we have been trying to get the Suffolk County Health Department to take action against some restaurnats that are polluting what is known as the Centerport Mill Pone, ever since it was closed to the harvesting of shellfish on March 11, 1965. I have enclosed a map and the results of the last sampling taken of this area by the Conservation Department.

It is now more than three years since the Suffolk County Health Department has been aware of this condition. While remedial action was taken at once in regard to a nursing home, and at the present time one of the restaurants is in the process of putting in a disposal plant, reports of repeated violations have brought no positive action against other polluters.

Sincerely yours,

Fred Schieferstein

Fred Schieferstein
V. P., Huntington Bayman's Asso.

NEW YORK STATE CONSERVATION DEPARTMENT

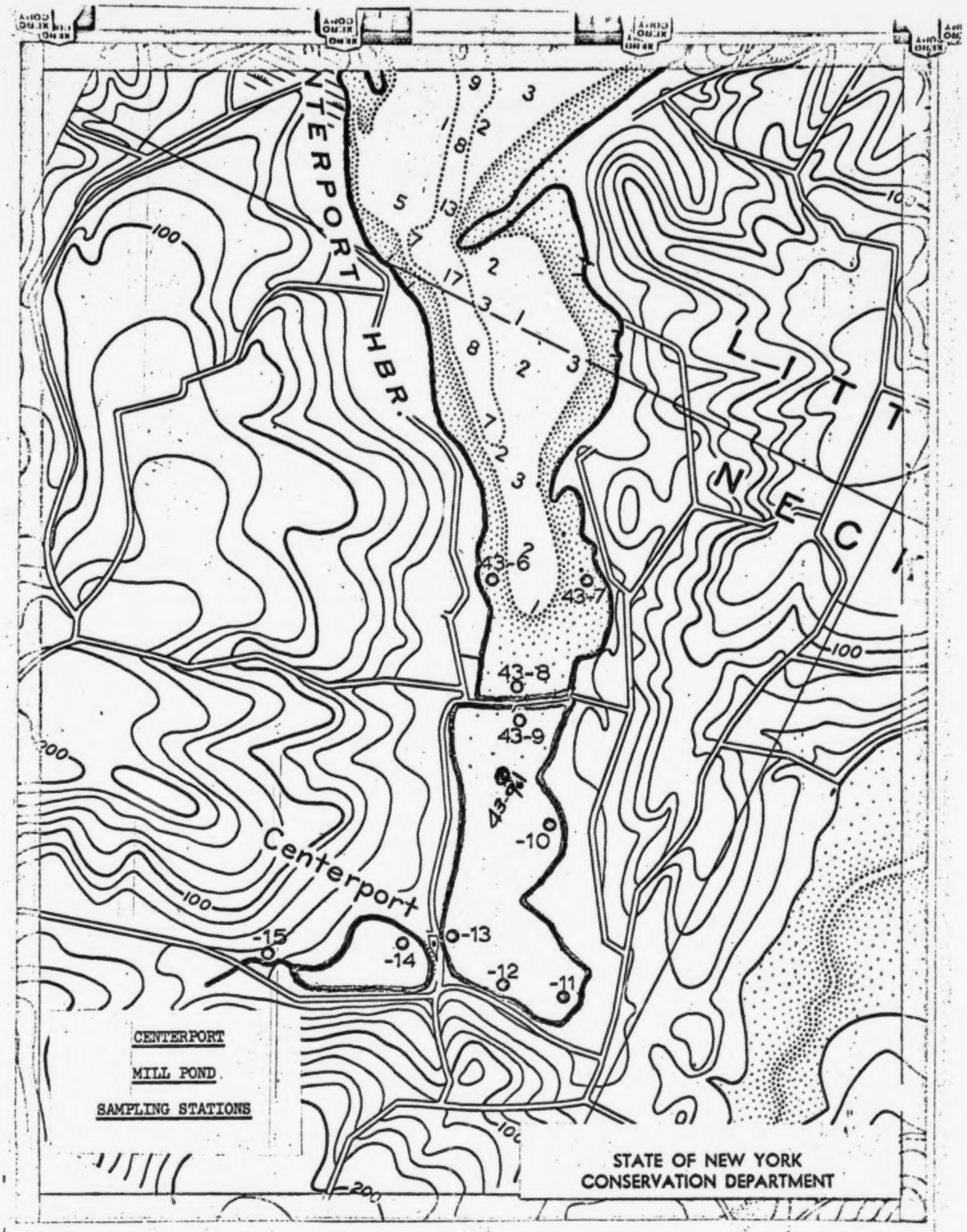
Descripti ata — Bay Surveys

Bay Centerport Harb Town Huntington County Suffolk Date Coll. April-10-68

Air Temp. precipitation last 24 hrs.

Station No.	Lab No.	Time	Tide	Salinity PPT	Water Temp. °C	Coliform MPN/100 ml	Fecal Coliform MPN/100 ml	Bottle No. D.O.	Bottle No. B.O.D.	D.O. PPM as O₂	B.O.D. PPM as O₂	Location and/or Remarks
43-6	91578	1030			13°	<1.8						
43-7	91579	1034			13°	2.0						
43-8	91580	1045			10°	49						
43-9	91581	1055			10°	170						
43-9.1	91582	1100			10°	920						
43-10	91583	1104			11°	1600						
43-11	91584	1107			11°	350						
43-12	91585	1111			11°	240						
43-13	91586	1114			11°	1600+						
43-14	91587	1135			15°	1600						

Signed Capt. L Walling
Survey Leader



CENTERPORT

MILL POND

SAMPLING STATIONS

STATE OF NEW YORK
CONSERVATION DEPARTMENT

234-1442
234-6664

JACK P. DANIELS

Attorney at Law

626 RIVERSIDE DRIVE (10-B)
NEW YORK, N.Y. 10031

July 25th, 1968

Mr. John S. Farlow, Regional Co-ordinator,
National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Mr. Farlow:

It has just come to my attention that a public meeting was held in New York City on the subject of pollution of our coastal waters on Tuesday, July 23rd, 1968. I regret that I was unaware of the meeting in time to attend, let alone prepare for it. Would you be good enough to put my name on your mailing list for any future meetings and activities. Also, I would like to receive any material you make available to interested parties.

I wish to register a vehement protest against the location of the North River Water Pollution Control Plant at 137th Street, Manhattan, this city, as currently projected. Honest people agree that the plant, at this location, will never achieve 90% B. O. D. removal. The City of New York, in its commendable desire to obtain financial aid, is not"telling the story like it is." If the City could be assured the promised funds it would move the plant downstream about four miles and there truly achieve optimum B.O.D. removal. However, the fear that any change of plans will dry up the resources leads the City to claim it will commit additional land and plant to the project to achieve something it knows it won't reach. As it adds new facilities to provide additional treatment the primary equipment's efficiency will not remain static but will decrease causing a treadmill effect, effort without result. This reason alone should be sufficient to persuade people who are interested in a clean river that the North River Water Pollution Control Plant must be relocated.

There are other reasons for its removal, too. The most important is sociological. When the climate of civil rights militancy has made the black man most sensitive it is putting a match to a fuse to put this"garbage dump" in his front yard. The projected site is on the western, river boundary of Harlem. If any more than this bald fact is necessary, come to our area. Ask Dr. Merril Eisenbud, Administrator, Environmental Protection Administration, New York City, if he will guarantee, in writing, that there will be no repercussions in the community - and in the other black and minority areas - if his plant comes in here. He would not do so when I asked for it at a public meeting he addressed.

Very truly yours,

Jack P. Daniels

Jack P. Daniels

JPD/rb
cc: Miss Lena Payne

STATEMENT OF HONORABLE SEYMOUR HALPERN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. Chairman, I appreciate the opportunity to express both my interest in and support of the estuarine pollution study being carried out by the U.S. Department of the Interior.

Many of America's bays, estuaries, seaward areas and tidal streams are suffering from manmade pollution caused by the continuing discharge of inadequately treated municipal and industrial wastes, agricultural and urban runoff, siltation due to soil erosion and dredging, and oil spillages on shore and at sea.

The destruction of water quality in our estuaries cuts deeply into economic and recreational uses: fishing and boating activities are hampered, swimming beaches must be closed, and shoreline property values decline. Ecologists have concluded that the estuarine-salt marsh fringe between the sea and upland is highly productive in biological terms. Algae and the detritus from marsh grass give nourishment to shellfish. Here too are the nursery grounds for about two-thirds of all fish taken for commercial use and recreation.

Much attention is now being focused on the importance of controlling estuarine pollution through local, State and Federal cooperation. The basic purposes of this study, I'd say, are to clearly define the overall extent and character of the estuarine pollution problem, and to formulate recommendations which the Congress may consider and act upon.

The pressures to make the decisions soon about the future uses of estuaries along our coastline are mounting. I firmly believe that our generation has the responsibility to make these fundamental decisions.

Just recently the House passed a bill (H.R. 25) authorizing a second investigation, which will complement this study. The bill authorized $1 million in fiscal 1969-1970 for a determination of how best to preserve our coastal estuaries as well as the lagoons of the Great Lakes. The bill further calls for the Interior Secretary to enter into agreements with any State or locality for the permanent protection of estuarine areas already publicly owned. This concept is based on the notion that the Federal Government need not spend unnecessary funds or usurp State and local conservation authority where estuarine areas are already in public ownership and protection.

It will be most fortunate to have these two study efforts follow in close succession and association. Both are directed to the same goals.

In closing, let me say how much I welcome the opportunity for public and private groups in this area to present their ideas and thoughts to be incorporated in the final report to the Congress. I look forward to receiving an assessment of these local contributions and also the detailed findings and recommendations of the federal study team.

STATEMENT OF THE MONMOUTH COUNTY COUNCIL OF THE LEAGUE OF WOMEN VOTERS FOR THE PUBLIC MEETING ON THE IMPACT OF POLLUTION ON OUR COASTAL WATERS, July 23, 1968

The League of Women Voters has been studying water resources on the national level since 1956. Since 1963 the Monmouth County Council of the League of Women Voters has been concentrating on how to conserve the county's water resources. The Council includes the Asbury Park, Matawan, Middletown Township and Red Bank Area Leagues. Since Monmouth County borders the Raritan and Sandy Hook Bays and the Atlantic Ocean, League members have become particularly interested in and concerned about our estuarine resources.

Through our studies we have learned that these areas where fresh and salt waters intermingle can be incredibly productive - more productive than the richest farming lands. They provide a habitat for an infinite variety of marine plant and animal life. They provide nursery or breeding grounds for shellfish and fish. They provide feeding and nesting areas for waterfowl. Accordingly, they should provide an ideal place for fishing, hunting, swimming, boating, hiking or just enjoying. In New Jersey they provide the basis for our state's largest single industry, the billion-dollar tourist-resort business.

But there are many indications that these vital areas are in jeopardy. Here in Monmouth County, beaches on the Raritan and Sandy Hook Bays are again being closed. The areas open for shellfishing are becoming progressively smaller. Boating and swimming are becoming increasingly unpleasant and hazardous. Fish and waterfowl are becoming scarcer.

For example, we read that the county's shellfishing industry has dwindled from a potential $3,000,000 to less than $40,000 per year. The only areas open to clamming today are about 4,000 acres in Sandy Hook Bay and the Navesink River. In 1966, the American Littoral Society, after a five-year survey of commercial fish catches off the Atlantic coastline, reported an alarming 50% decrease in the hauls of 18 important species of salt water fish. On the Sandy Hook peninsula the herons are no longer nesting and the ospreys are not producing fertile eggs.

Estuarine areas here and elsewhere are being systematically damaged and destroyed. Pollutants are injuring or killing plant and animal life in these shallow waters. Effluent from inadequately treated sewage and seepage from septic tanks, refuse from the ever-increasing boat traffic, chemicals from industry, pesticides used by farmers and mosquito exterminators, and silt are all contributing to this destruction. Thermal pollution is posing another threat.

At least as damaging to estuarine life is the constant dredging of the estuaries and the dumping of fill on the marshes to provide sites for homes, industry, amusement parks or garbage dumps. To be productive these areas must be preserved in a natural state so that the flow of tidal waters can wash nutrients from the soil to stimulate lush plant growth and a fertile environment for fish, shellfish and waterfowl.

Many of the marshlands along the Atlantic coast play an important part in the life cycle of fish. Some of our valuable fish migrate to and from northern and southern marshes during the year at various points in their life cycle. It, therefore, is important that these marshes be preserved to insure a continued abundance of fish. This chain of coastal marshes is also vital for the wintering, feeding and breeding of migrating birds.

In Monmouth County only a few marsh locations remain which are relatively undisturbed. It is imperative that these be preserved. Efforts also should be made wherever possible to restore damaged estuarine areas to fuller productivity. Certainly efforts should be made to clean up areas suffering from pollution. This will mean the construction of millions of dollars of sewerage treatment facilities. Such efforts are being held back by the lack of appropriation of adequate state and federal funds to help municipalities bear this staggering burden. Great strides have been made in recent years to provide legislation, both state and national, to implement the cleaning up of our waters. But without funds to back up the laws little progress can be made.

The Leagues in the Monmouth County Council have not studied what system of management would best provide for the development and protection of our estuarine resources. However, there is little question that all levels of government will need to be involved. Public acquisition of the most valuable marshes certainly would be desirable. The lead in this effort should be taken by the federal government.

New Jersey could and should acquire a percentage of these. The New Jersey Supreme Court's decision to uphold New Jersey's claim to about 250,000 acres of tidal meadowlands should place the state in a good position to take strong measures to protect these areas. However, this decision is now being threatened by the State Legislature.

On the local level municipalities should be encouraged to plan and zone to protect estuarine areas. Citizen education is a desperate need.

The Federal Government has long protected the public interest in navigation, but has been slow to recognize and protect other estuarine values such as commercial and sport fisheries, recreation, wildlife and natural beauty. The Monmouth County Council would like to see strong protective federal legislation to help preserve these values and hopes that these hearings will help in bringing this about.

FREDERICK F. RICHARDSON
COUNSELLOR AT LAW
P. O. BOX 582
46 BAYARD STREET
NEW BRUNSWICK, NEW JERSEY 08903

July 26, 1968

L. M. Klashman
Regional Director F.W.P.C.
Kennedy Building
Boston, Mass.

Dear Mr. Klashman:

In relation to the July 23rd meeting (N.Y.C. - Estuary Conference), I submit herewith a written statement of my remarks, which were abrupted at the meeting because of time requirements, which remarks I would appreciate your including in the transcribed record. I also submitted earlier (for the record), a typewritten statement of my general position, which I would appreciate your printing.

I think the conference last Tuesday, will prove fruitful, although the weather (July 23rd) was hot and the trip to New York City, for many, was a trial on many of those from out of town, including yourself.

Thanking you, I am

Very truly yours,

FREDERICK F. RICHARDSON

FFR:laz

FOR POLLUTION CONFERENCE
JULY 23, 1968

LADIES AND GENTLEMEN:

My name is Frederick F. Richardson and I am the former Mayor of New Brunswick, New Jersey, and have been doing various work as legal consultant to the City of New Brunswick, especially in connection with the Raritan River.

I have produced and have on the wall in back of the rostrum, a map from the U.S. Govt. (Dept. of Commerce), showing the charted areas of the estuary of the Raritan River. It includes the waters of the Kill Van Kull (Staten Island Sound) and Raritan Bay.

The area I desire to direct your attention to particularly, is the so-called Great Beds Area in Raritan Bay. This area, extending some five miles off shore from South and Perth Amboy, will be seen as situate in the middle of the confluence of the Raritan River and the Kill Van Kull. Great Beds derives its name from the great beds of sedimentation, which this confluence has deposited. This Great Beds Area is the heart and the crux of our whole Estuary Problem of both the Raritan River and the Kill Van Kull. It is the crucial spot of the whole problem. Thru this area, the Federal Government has now constructed a Cross Channel, directly bisecting these Beds from the Kill Van Kull to the Raritan River. This is known as the "Cross Over" and extends up the River as far as Raritan Arsenal This channel is some 45 ft. deep, and in addition to this, the Government is dredging other areas adjacent to the channel and a part of the Great Beds, so that a greater volume of deep water will generally exist in this spot, which was formerly a blighted area (inaccessible at low tide).
The shore line of New Jersey, from South Amboy to the Highlands, and bordering the west side of Raritan Bay, is very shoal and this low water extends

out into the bay some distance, as well as extending pretty far down the line towards the Highlands. Its average is 2-3-4-5 feet. The east shore of the Bay, along Staten Island, is also somewhat similarly shoal. I point out these innate physical characteristics because they have a bearing on things to do , which I am going to suggest for your consideration in this Estuary. But before I point out these six suggested major possibilities, as well as five minor ones, I desire to note the sad fact that since our last meeting a year ago, there has occurred the death of Senator Kennedy and Elsom Killan, both ardent supporters of clean water. I also desire to state that this conference is most timely because these problems press for a solution and the present lack of leadership and objective planning, creates a handicap which, as time passes, makes the attainment of these improvements much more difficult. We have to hit while the hammer is hot.

SIX PROBLEMS TO BE DISCUSSED

1. The first is how to get rid of this tremendous sedimentation at Great Beds, or at least the major portion thereof, and concurrently, how to avoid a repetition and a new piling up of these sort of deposits at this confluence.

2. Secondly, which Tidal Dam should be built of the two being considered, the South River one or the Crab Island one. Both are now being pressed by their supporters and there is much confused thinking prevalent. The location of both is about 5 miles up the River from Perth Amboy, and the Government, I hope, can supply some needed leadership.

3. What should be done with the Middlesex Sewerage Plant at Sayreville, that is now malfunctioning so badly that it is one of the principal pollution offenders.

4. What is the future Potential development for industry, parks, recreation grounds and beaches along the shoal coast lines of the Jersey and Staten Island shores.

5. What is the development possibilities of Raritan Arsenal, now that a new channel has been dredged, both as a new maratime port and possibly a supplemental air base to compliment Kennedy and Newark Airport.

6. Is it feasible, economically and from a maritime standpoint, to erect a sea wall across the lower reaches of Newark Bay, across the Kill Van Kull at say Elizabeth port, thus sealing off Newark Bay waters and diverting this Newark Bay water from its present westerly course down the Kill Van Kull into Raritan Bay, to over and under the Bayonne Bridge eastward into Greater New York Bay and thus channel it back westerly thru the Narrows into the deep water of the Atlantic Ocean. This would avoid some of the great industrial waste now carried by the Kill Van Kull, being deposited in the Great Beds area off the Amboys, and prevent the repetition of some of what has already happened in the past. This sealing may or may not be feasible, but it merits looking into carefully. An ounce of prevention is worth a pound of cure. The lower Kill Van Kull from Newark Bay is replete with Chemical Plants, which add to the waste already carried by Newark Bay, and this diversion of part of the load now deposited on these Great Beds, will be helpful.

NO. 1 - I PROPOSE A 3 PRONGED FRONTAL ATTACK ON THE GREAT SEDIMENTATION ACCUMULATED IN THE ESTUARY IN THE AREA OF THE GREAT BEDS.

(a) Elimination of Present Sedimentation

The Great Beds Sedimentation involves an area of the Amboys of many square miles, and except where the channel is cut thru, the water is mostly shoal - 3 or 4 or 5 ft. - except at the fringe (eastern portion), out where the old Perth Amboy Lighthouse used to be. Except for the new channel, it has been virtually non-navigable even to small craft.

I propose to continue and greatly enlarge the dredging now going on, so as to include practically all of the Great Beds area, and to dredge not 5 or 10 ft., but 30 to 40 ft. and thus get real deep water, which will help curb the pollution of this area, thru its own action.

Deep water, as is well known, acts as its own purifier and the deeper the volume, the better the purification. The dredged material can be sold nearby for groundfill, to develope the shore lines on both sides of the Bay, so the expense will or should be greatly lessened by the ready accessible market.

(b) Prevention or Diminution of Recurrance

As to prevention of future accumulations, I propose as part of this project, the erection of a new sea wall to divert large volumes of industrial waste from Newark Bay, and this I will discuss separately later, but just now, I want to emphasize getting rid of as much sedimentation in this Estuary as is practicable and within the money available. This dredging work is now going on and I endorse its continuance and its extension as the primal approach to recapturing the values of this estuary.

To get rid of as much of this sedimentation as possible and using it to reclaim the shore lines of both the Jersey and the Staten Island shores, should be the theme song of our whole activity, as I see it. That, plus its elimination in the future thru sealing off of Newark Bay, and shunting it into the Upper New York Bay and thru the Narrows, seems to be entirely practical and feasible and should have early consideration.

(c) Creation of Chemical Bomb Use in Fighting Pollution

In connection with this project, I will explain later my proposal for seeding this/confluence area with chemical mines to combat pollution in this badly congested and polluted areas of shoal water - seeding the clouds is practical and is being done, so why not the congested pollution area where the water is appropriately suspectible.

NO. 11 - WHICH DAM SHOULD BE BUILT - CRAB ISLAND OR SOUTH RIVER TIDAL DAM.

The accompanying Perth Amboy Evening News editorial explains this situation as it presently appears. Since then (July 16), there is in the Star Ledger of Newark (July 26, 1968), by Ted Serrill (Pg. 7), some indication that the Board of Freeholders are about ready to ask the state to erect a cheap temporary dam across the South River and to acquire some of the necessary property. This Dam would be to prevent the further intrusion of salt water until the massive new Crab Island Dam is erected, which is now only fantastically costly, but is several years off. The Government should interest itself in leadership in this activity also.

NO. 111 - DISCUSSION OF MIDDLESEX COUNTY SEWERAGE PLANT AT SAYREVILLE.

This plant is malfunctioning partly because its only a primary treatment plant and partly because it has an overload of chemical waste heavy with BOD loads and partly because its pipeline has its effuent in shallow water out in the Bay. Its administration has been derelict and the results of plant operation most disappointing. The erection in this strategic spot of a new tertiary treatment plant of modern design, capable of treating regional waste, should be considered. It is near the mouth of the estuary, in a good spot, to gather up most of the sewerage outfall of the river, but it needs entire new facilities to cope with its job. It should be done on a regional basis to include the upper reaches of the River.

The present plans are to spend 30 million dollars for secondary treatment, which at best, will be ineffective. If we are to do a job, let's do it right. This Sayreville plant is the key plant of the whole river area and must be made to function properly and to do its job administratively.

The Federal Government should monitor the operations of this plant and come up with some answers. Local county authorities are indifferent and the State Board of Health can only think up secondary treatment (regardless of its total effectiveness).

NO. lV - FUTURE INDUSTRIAL DEVELOPMENT OF SHORE LINE AREA.

I speak of both the New Jersey Shore Line and also the New York Shore Line along Staten Island, down to the Great Kills Bay.

I believe this Feasibility Study of the State, which I have with me, demonstrates that the New Jersey shore line can be filled in and used with great advantage, and what is possible along the Jersey shore, is equally applicable to the low and shoal waters shore line of Staten Island, looking over Raritan Bay. The water there is only 2-3-4 ft. deep, similar to the New Jersey side, and what applies to one shore line, would apply to the other in this whole area. This Feasibility Study (Burns & Roe, 1967) has important charts, industrial studies, soundings of water depth, all considerable, relevant data which can be helpful. It all convinces me that the shore lines of New Jersey and New York can be improved to a fantastic degree at minimum expense, even though permission for the location of the proposed aluminum plant was ultimately denied. This proposed plant was considered to be a polluter, and was shut out by public sentiment, but the study itself, nevertheless, remains most instructive and should be very helpful.

NO. V - DISCUSSION OF RARITAN ARSENAL AREA AND ITS DEVELOPMENT.

I urge a new port to supplement New York and Newark and the creation there of large public warehouses and terminals, thereby taking advantage of this new deep draught channel (45 ft. deep).

I urge a study of whether an Airport can be built here to lessen air traffic in the New York area. I quote the Newark Star-Ledger why Great Swamp area has been prevented for years - politics and a pledge for votes that Gov. Hughes made.

(Here is attached news article)

The present "stacking up upstairs"over the New York and Newark airports can only be relieved by some affirmative prompt action, and an airport at Raritan Arsenal, may be the answer. Even though large tracts have been sold, if these sales are cancelled, as now seems possible, sufficient ground may be made available for the purposes needed. It bears study and particularly in view that almost adjoining this area is the old "Hadley Airport", which in the Newark Star Ledger (July 26, 1968), will probably be re-activated as a "small plane field."

The channel up to Raritan Arsenal would permit an alternate port to Newark and New York, where ocean-going boats could unload under New Jersey's dock front eyes and help curb the paralyzing grip the New York longshoremen Union has on the New York docks. It is another step in diversification and at the Arsenal, the great spaces there could be developed into another air terminal, which is now so badly needed. The magazines now emptied, could be converted into nuclear shelters for the exodus from the Metropolitan area, some 5-10-15 million people perhaps, if war comes. McGuire is too far away - and this proximity to New York should be considered.

NO. VI - ERECTION OF SEA WALL.

I have already indicated some of the possibilities of this proposed barrier and the course this diverted water can take. It will lead to less water in the Kill Van Kull, from Newark Bay, but this will be replaced by the Raritan Bay water. The shoaler the water left in the Kull from the Raritan Bay back up, will be no great handicap. It may prove to be a possible additional means to fight pollution, and I suggest the use of a chemical mine, somewhat similarly as we now seed the clouds. These chemical mines would contain anti-pollution chemicals or perhaps oxygen and would be used in shoal water, where the pollution is concentrated. They could be eroded by ordinary water action, which would trigger the explosion. Such a mine has not yet to my knowledge, been worked out, but our Industrial Research people have a splendid chance with their facilities and know-how, to invent and manufacture what could be a helpful agent to fight pollution.

There are five other lesser problems which I think should also be mentioned. They are matters of some importance and I list them in order without discussion.

THE FIVE LESSER PROBLEMS TO BE DISCUSSED

(1). Reclassification of our river just north of Bound Brook. The Government has tentatively approved the classification except for paucity in oxygen demand, which they are trying to get the State Board of Health to raise to a higher degree.

(2). Protection of water rights of New Brunswick in the river near the Penn R.R. bridge, just north of New Brunswick.

(3). New criteria by State Board of Health on bacteria count of surface waters and new criteria for heated waters discharged into the bay. Both these criteria are not yet been supplied.

(4). Legislation for enforcement suits by private citizens or public officials (Cong. Ottinger, N.Y.).

(5). New advisory committee on purer water.

Editorials

State Gambles With Water Supply

For almost 25 years, state officials have been quietly and recklessly gambling with the water supply of much of the Raritan Bay area.

As a result, the water supplies of Sayreville, South Amboy, Perth Amboy and Madison Township are in serious danger of disappearing or turning to salt water.

The extent of the danger, the risky state policies, and mistakes in state protective measures were detailed recently in a series of articles by Evening News staff writer Neva Flaherty.

More than half the water supply counted on by area residents and industries does not exist, because the state Department of Conservation and Economic Development knowingly granted permits to pump more water than is available.

The only reason the southern Middlesex County area does not run out of water is that all of the pumps do not run full-time.

The water supply of Perth Amboy and southern Middlesex County comes from the Old Bridge Sands, a geologic formation that absorbs and stores rainfall. The tidal section of the South River cuts through the Old Bridge Sands.

When fresh water is pumped out faster than rainfall can replace it, salt water from the South River can seep into the empty spaces in the sands. Eventually, this salt water could ruin the fresh water supply.

Geologists warned of this danger 25 years ago.

Some Perth Amboy wells at Runyon were contaminated by salt water in 1962. Nevertheless, the state continued to approve more pumping permits and did not begin to monitor salt water intrusion in the sands until early this year.

For more than 20 years, state officials talked about building a South River tidal barrier dam to keep salt water from reaching the sands. Lakes behind the dam would increase the available water supply, they said, and thus make good on more of the pumping rights the state had granted.

Finally, in 1965, the state study was completed and a year later, land purchase began.

Then the state found its study contained serious, basic errors, because it was based on superficial investigations. No soil borings had been made.

State engineers had not checked the market values of the land. Instead, they assumed from driving along Bordentown Avenue that nobody would want the sandy, scruffy acreage.

As a result of these errors the dam would cost twice as much, and require twice as much land as originally estimated. But its benefits, the state discovered, would be less than originally predicted.

The dam would keep salt water from the sands, but the lakes behind it would not double the available fresh water supply.

The badly-needed South River tidal dam will be delayed at least another year or two while these problems are solved.

The Conservation and Economic Development Department's handling of the Old Bridge Sands water supply is dismaying.

It is disturbing that the department could so seriously bungle the engineering studies of the protective dam project.

Water Policy and Supply Director George Shanklin said the hasty, erroneous studies were made because the department is short of engineers. The lack of engineers is delaying solution of the South River tidal dam problems, because the staff can work on that project only part-time.

If Shanklin is right, it is up to him and Commissioner Robert Roe to demand adequate funds for salaries from the Legislature.

Solution of the South River dam problems should be a full-time, top priority project.

And when the state is ready to begin building the dam, the Republican-controlled Legislature, which deferred a water supply bond issue this year, should make certain that the funds are available so work can start immediately.

South River Dam Needed First

David I. Stepacoff of Perth Amboy, a member of the state Water Policy and Supply Council, last week noted that "the county Planning Board would better serve Middlesex County if it would bend its efforts toward the construction of the South River tidal dam rather than muddy the already troubled waters by exploiting the Crab Island dam proposal."

The planning board had indicated a preference toward pushing the 80-million-plus Crab Island dam plan, including efforts to obtain local support for the federal project. That project is conservatively 10 to 15 years away from realization, whereas the vitally-needed South River tidal dam, estimated to cost $9.5 million, could be in operation within five years.

Stepacoff said that the county Planning Board, "by suggesting pie-in-the-sky in the form of the Crab Island project, is diverting proper attention from the South River tidal dam project, sorely needed."

The South River dam would protect the water supply in the Old Bridge Sands, which is in imminent danger of destruction by salt water intrusion.

The larger Crab Island project would protect both the Old Bridge and Farrington Sands. Salt water has already ruined five wells in the Farrington sands, and pumping from wells in those sands has been reduced to slow salt water damage.

Both the South River and Crab Island dams would create reservoirs that would increase the area's water supply; the larger increase would come from the larger Crab Island project.

In the long run, the larger dam project will probably be needed to create the water supply for Middlesex County's future growth.

But right now, the most pressing need is for the South River tidal dam, to protect the present uncontaminated water supply from salt water pollution.

DISPUTE OVER COSTS

Jersey to re-check two sites for jetport

Special to the Star-Ledger

CINCINNATI — Gov. Richard J. Hughes disclosed here yesterday that he plans to have his office re-analyze Bearfort in Passaic County and Bowling Green in Morris as possible sites for a fourth billion-dollar jet airport.

In particular, Hughes said, he wants to get the actual facts about the cost of leveling off mountains at both sites which the Port of New York Authority has claimed would cost hundreds of millions of dollars.

Even if the costs of leveling would be higher than for other sites, Hughes wants to know from his projected study whether such an outlay wouldn't be more than balanced by the economic benefits to New Jersey.

"I am terribly worried," Hughes said, referring to the recent two-hour delays in planned arrivals and departures at Kennedy and La Guardia Airports and lesser delays at Newark Airport.

The delays, which were predicted a decade ago as air travel soared annually, have been receiving national attention.

"I'd like to see a jetport authority created to take over the problem," Hughes said.

The governor also said he has information showing that when U.S. Route Interstate 80 is completed, land travel time to mid-Manhattan will be under an hour.

Brevity of travel time was an important factor in the Port Authority's recommendation nearly eight years ago of the Great Swamp in Morris County as a site. Airlines have objected to a central New Jersey site in the pinelands because the land travel would take too long.

Hughes, who is attending the National Governors' Conference here, repeated that "I still regret" the promise he made during his 1961 campaign for governor that he would not allow a jetport to be built in the Great Swamp.

PREVIOUS CONFERENCE

Curiously, that promise was evoked as the result of an occurrence during another Governors' Conference (in Hawaii) when former Gov. Robert B. Meyner announced in favor of the Great Swamp. Hughes accepted the advice of his campaign aides that he would win votes by rejecting the swamp, largely occupied by fashionable estates.

"But I can't see any honorable way out of my promise," Hughes said yesterday.

Hughes said his promise dealt only with the Great Swamp and that the campaign pledge would not interfere with his espousal of an airport at Bearfort or Bowling Green.

The Port Authority has said a fourth jetport is urgently needed to meet the air service demands of the metropolitan area, now reaching crisis proportions.

At Newark, LaGuardia and Kennedy International airports, passenger totals are running almost 11 per cent ahead of last year. Nearly three million travelers monthly pass in and out of the airports, calling for more than 110,000 landings and takeoffs.

As a result, the commercial

(Please turn to Page 6)

Jetport sites in Jersey get a re-checking

(Continued from Page One)

airports are at saturation levels during peak travel perioels during peak travel periods. This is why the shuttle flights to Boston and Washington had to be suspended for a time last week.

The waiting delays had far exceeded the flight schedules of about 46 minutes to Boston and a little over an hour to Washington.

Airlines at Kennedy International and LaGuardia airports reported delays ranging from 20 minutes to an hour last night. Operations were normal at Newark Airport.

POSSIBLE RESTRICTIONS

A Federal Aviation Administration official said yesterday the agency may limit the number of planes leaving the New York area airports each hour to reduce flight congestion.

Walter Keis of the FAA's air traffic division said such restrictions were in effect at Washington National Airport and "something will probably have to give in this area."

Keis also Indicated the agency was "actively considering a ban on private, non-commercial planes from the airports during peak periods or possibly at all times.

Keis joined Jack Maher, national coordinator for the Professional Air Traffic Controllers Organization, and Joe Bartling, chairman of the air traffic control committee of the Airline Pilots Association, in discussing the air traffic jams on WNBC-TV's "Direct Line."

Statement on Behalf of the
Long Island Association of Commerce & Industry

Presented by: Rod Vandivert
Conservation Planners, Inc.

for the Meeting on "The Impact of Pollution on Our Coastal Waters," Sponsored by The Federal Water Pollution Control Administration of the United States Department of the Interior

July 23, 1968
The Caspery Auditorium
Rockefeller University, New York, N. Y.

Mr. Chairman, ladies and gentlemen:

I am representing the Long Island Association of Commerce and Industry. On Long Island we are no doubt more sensitive to the problems of water pollution and estuarine environment than most of the other areas of the country.

Long before the white man arrived in this country, Long Island's Indian population was heavily estuarine-oriented. There are still areas in our South Shore wetlands where traces of summer encampments can be found.

Long Island's early settlers used our estuarine areas, our marshes as a basic resource. Fish and shellfish from the bays were harvested, first as a basic food resource, then as one of Long Island's first commercial endeavors. Ever since the earliest days Long Island has had an important marine economy. We are acutely aware that many of the practices of the past must now be replaced with well balanced and constructive development to protect, and even possibly to enhance, our estuarine areas and steps are being taken in this direction.

One Long Island builder has acquired 230 acres of bay front property on the South Shore and is planning a development which may well be the first of its kind anywhere in the world. The first portion of the planning for this development will be done in concert with the Audubon Society and other conservation agencies. The best areas will be set aside to be preserved to ensure the integrity of the ecological balance.

The areas of the land least vital to the resource will be used in such a way as to create an appropriate and profitable development. Certainly this is only one instance -- it cannot yet be quite typical --

but it is an important example of the kind of planning that will allow continued growth with a maximum of respect for estuarine environment.

In a recent survey, 98 out of 105 members of the Long Island Association gave conservation and pollution control a position of priority in their responses. Industry on Long Island has indicated its desires for a better environment and for improvement in the area of pollution control.

There is no question that we must have guidelines clearly drawn by the Federal Government. There is no question that we must have a better understanding of the resource problems which we face. We need the expertise and the help available at all levels. We realize fully that all this is going to be costly. However, the ability to work with municipalities and waste treatment districts, as well as agencies on the various levels of government and a creative program of financing and amortizing the necessary works can help materially in creating an atmosphere within which industry can join state, local and federal government in sound water pollution control practices. The state pure waters program has gone a long way to alert business and the populace to the need. It has formed a basis for funding important municipal works. We must now, however, establish the basis and the understanding that will be required to complete the job. Standards must be set for water quality and means of achieving and maintaining the quality must be found. This, however, must be done in a manner that will encourage further growth and development of industrial potential and not simply penalize the industry of one given area. Crises can and must be met with both government and industry working hand in hand. More important though, planning and regulation must be adequate to do the job of creating and maintaining a good environment and yet be sufficiently real that the result is obtainable. This can be done only with a comprehensive view of all of the ingredients of a good environment. New concepts must be encouraged. It is possible that new zoning or re-zoning will be necessary.

History has shown us that simply the establishment of laws and standards by the federal, state or local government is not adequate. A new partnership must be established in which every level of government and industry join to preserve, restore and enchance our total environment.

CONSERVATION SOCIETY of LONG BEACH ISLAND
P.O. Box 25, Barnegat Light, N.J. 08006

AFFILIATED WITH FEDERATION OF CONSERVATIONISTS
UNITED SOCIETIES (FOCUS)

July 22, 1968

Mr. John S. Farlow, Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey, 08817

Dear Mr. Farlow:

In accordance with our letter dated June 30, 1968, we are pleased to submit for registration and as part of the record, statement on estuarine pollution and marshland losses on Barnegat Bay and Little Egg Harbor, Ocean County, New Jersey.

We trust you will find this report helpful in your studies.

Yours very truly,

CONSERVATION SOCIETY OF LONG BEACH ISLAND,

A. J. Walnut, President

Robert B. Litch

Robert B. Litch, Vice President

A STUDY OF THE IMPACT OF POLLUTION ON OUR COASTAL WATERS IN BARNEGAT BAY AND LITTLE EGG HARBOR, OCEAN COUNTY, NEW JERSEY

PREPARED BY

THE CONSERVATION SOCIETY OF LONG BEACH ISLAND
(P.O. Box 25, Barnegat Light, N.J. 08006)

FOR

UNITED STATES DEPARTMENT OF THE INTERIOR

FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

INTRODUCTION

Ocean County Senator William Hiering has made an inventory of the wetlands and meadowlands along the coast of New Jersey, as follows:

Hackensack and North Jersey Meadows	23,000 acres
Raritan River and Bay area	23,500 "
South and East Jersey (Monmouth, Ocean, Atlantic, Cape May Counties)	118,500 "
South and West Jersey (Cape May to Trenton)	80,000 "
Total wetlands and meadowlands	245,000 "

Of this total 45,000 acres have been lost to industry and housing developments. These tidal lands are estimated to be worth $2 billion, probably the most valuable large area in the country. (1)*

In recognition of this fact the New Jersey Supreme Court on November 6th, 1967 confirmed the State's historic claim to all the wetlands washed by the mean high tide. The Court said: "The State owns in fee simple all lands that are flowed by the tide up to the high-water line or mark. The mean high tide is defined as the medium between the spring and neap tides." We support the Audubon Society's proposal to preserve all existing wetlands and meadowlands as State open space, and should be officially dedicated into perpetuity as unspoiled open space. (2)

A tidal marshland means many things to many people. To some it is an evil smelling eyesore, a treacherous bog infested with mosquitoes. To others it represents a piece of real estate of great potential, or an unnecessary obstacle to boating. To many others, hunters and naturalists, it is a haven for a variety of wildlife. And recently to a growing body of scientists, it represents a dynamic ecosystem of unique biological, geological, and ecological interest and importance.

Coastland marshlands are among the most fertile areas of the world. The amount of protein that these marshes produce per acre each year is unrivalled by any other natural soil, and difficult to equal, even in intensive agriculture using commercial fertilizer.

Tidal salt meadows as a productive unit, weave the components, water, soil, plants and animals into a huge self-renewable, feed producing unit. The tide meadows and adjacent waterways provide spawning and nursery grounds for many shellfish and animals. They are the breeding habitat for the Clapper Rail, black duck, laughing gull, and feeding grounds for wading birds that nest in the barrier beaches. Once drastically altered by land fills, dredging, or pollution the tidal salt meadows will be lost forever to man and animal, at the apex of the feed chain, as well as to other forms of life of this estuarine-ecosystem. (3) N.J. Audubon Society, Nature News, March, 1968.

THE OVERALL PROBLEM

The deleterious effect of commercial exploitation of our shorelands has been summarized by a Long Beach Island resident as follows:

* Reference numbers in ( ) refer to Bibliography at end.

"The bayside developments and expansion of bulk heading, especially to the deeper waters towards the channels, natural or dredged, if continued to its ultimate limit, will upset or destroy the bay ecology and its present natural balance.

"Where will the horseshoe or king crab lay its eggs, with no natural sandy shore line? How will the turtles get ashore to bury their eggs? Where will there be the shallow eelgrass, hideaways for the young fish and shedding crabs that need the protection of such havens from natural enemies?

"We have already lost or chased away many species by dredging canals through the marshlands for mosquito control, We have permitted developers without any long time view to put in lagoons, to build hundreds of houses on a sand bar until recently the home of hundreds of ospreys, now no more. What will be left except the water, for the houses they are building?

"It is time for restraint, courageous restraint, so that future generations will not have to see the things we presently enjoy in life, just as we have to view the carrier pigeons, and other extinct creatures through glass in museums." (4)

SPECIFIC CASES OF COMMERCIAL DEVELOPMENT IN BARNEGAT BAY AND LITTLE EGG HARBOR WHICH MAY CAUSE EVERLASTING DAMAGE TO THE AREA

1. On the west shore of Little Egg Harbor and Manahawkin Bay is a huge housing development known as Beach Haven West. This development is built on filled in marsh land. Bay clammers say that this filling in of the marshlands is the chief cause of the loss of usable bay. Only a few years ago there were ducks and white cranes where now are filled in house lots. More and more of these houses are going up every day, indeed the developer has obtained possession of this marshland almost to Tuckerton, covering about 15,000 acres, now lost to the tideland and wetland area of the State. The ecological balance of the entire area is swiftly being upset to the point where it can no longer serve as feeding ground and breeding areas for fish and water fowl. (5)

A further note. The primary sewage plants on Long Beach Island pump the solid matter into the Atlantic Ocean in the winter. The solid matter from the sewers of Beach Haven West is pumped into the bay.

2. On July 11, 1968, the Asbury Park Press carried an exultant story entitled: "Suburban Ills Replace Old Coastal Meadows." This story dwelt on Little Egg Harbor Township and especially on Mystic Island and Atlantis Developments. This is the largest lagoon development in the east, and now has some 3,200 population which has replaced the farms which dotted the marshlands here. There is now a new proposal to add some 5,000 houses and apartments which will triple the population in the next fifteen years. Another development will take up 1,300 acres of marshland located between the center of Tuckerton and the Garden State Parkway. Drainage, dredging and filling go on at all times, with the consequent loss of meadowlands to the State. (6)

3. The Jersey Central Power and Light Company is currently building a $60 million atomic power plant at Forked River, Ocean County, and has plans for another plant as soon as the first is in operation. These atomic plants are located on the estuary of Oyster Creek and the South Branch of Forked River. Both streams were formerly clear unpolluted water flowing direct from the

Pinelands aquifer into Barnegat Bay. At the estuary lived hundreds of huge turtles, water fowl, muskrats - all have been dredged up by the Power Company. The company has widened both streams to 100 feet with 10 feet depth, for the purpose of cooling the atomic reactors. The company will pump 460,000 gallons of water per minute from Barnegat Bay up the intake stream. When it is returned to the bay through the outflow it will have reached a temperature of 95 degrees. Owing to protests by resort owners, and by conservationists, including the Conservation Society of Long Beach Island, the company will build a six mile pipe line to carry the heated water under Island Beach State Park 1,500 feet into the Atlantic Ocean. This is another large wetlands loss to the State. (7)

4. Cedar Keys, Inc. a firm of real estate developers, has obtained ownership of the 3 acre Woods Island, 50 feet offshore in Barnegat Bay at Harvey Cedars, N.J. This company has applied for riparian rights which will give them the right to dredge the bottom of Barnegat Bay taking therefrom enough sand to build up the 3 acre island to 21 acres. They own the 3 acre island but do not own the additional 18 acres as it is part of Barnegat Bay.

Granting this riparian right will set a dangerous precedent in granting riparian rights throughout the country. It could mean that no application for dredgeing and increasing the land area by riparian right, could ever be denied. Any island, sand bar or estuary in the nation could be subject to the same interpretation.

5. The Brant Beach Golf Club Estates has bought Flat Island off Brant Beach, Long Beach Township, Ocean County, New Jersey. This island now consists of 120 acres. If their application for riparian rights is granted, they propose to dredge out of the Bay enough sand to build up the island to 270 acres.

On this enlarged island the developers propose to erect 1,000 cottages, an eighteen-hole golf course, club house, and a 5-story condominium apartment. The project was passed by the Long Beach Township Planning Board without one dissenting vote, although many individuals and organizations had previously testified against it.

Our friend, the clammer, quoted above, says that the Bay bottom near Flat Island is the best clamming ground in the State. It runs in the less polluted water of the bay generally south of the Inland Waterway from Long Point to Ham Island. The best sand in the Bay, the sand in the clamming beds, will be used for the fill to double the size of the island. Therefore good-bye to the clam beds forever. If these riparian rights to through, we understand there are similar plans for every island in the Bay. Is there no way to stop this despoiling of beautiful Barnegat Bay? (8)

The Conservation Society of Long Beach Island and the Joint Taxpayers Council of Long Beach Island have gone on record to oppose both the development of Woods Island and Flat Island for the following reasons:

a. The New Jersey Department of Health has noted that pollution of this area would destroy a valuable breeding ground for fish and shell fish, and would mean that the area would have to be closed for fishing. Disturbing the underwater contours of the bay would also destroy the plants upon which both fish and fowl now feed. (9, 2)

b. Commercial development of these islands will destroy its value as a refuge for wildlife and wild fowl; it will destroy its value as a sheltered area for the youngsters who can now safely go boating, exploring and swimming off these islands - and others like them. (9, 3)

c. The precedents which would be set by granting riparian rights as applied for by the prospective developers would be most unfortunate for the future of Barnegat Bay, and indeed for any bay area along the entire Atlantic seaboard. It would mean that no future application for development of any island or sand bar could be denied, and it would most probably result in the bay area being built up in colonies of lagoon-front houses with the eradication of all fishing, hunting or water-based sports in Barnegat Bay. It would destroy the beauty of the bay and all of its value as a wildlife preserve. (9, 4)

d. The most important asset which Long Beach Island and the Barnegat Bay area possesses is a clean, unspoiled natural environment. This has been heavily encroached upon in recent years so its preservation is of paramount importance - not only to keep the region as an attractive place to live but as a vital sector of the resort industry of the County. (9, 5)

STATE PROPOSALS FOR WATER STANDARDS IN BARNEGAT BAY AREA

An FW-1 classification is proposed for portions of streams and ponds which drain into Barnegat Bay, Cedar Creek, Manahawkin Creek, and the Mullica and Wading Rivers. (10)

TW-1 classification: tidal waters suitable for recreational purposes, as a source of drinking water where permitted, and for shell fishing, where permitted is proposed for all tidal waters downstream from the head of tide to the surf. (10)

This includes Manasquan River Drainage, Cedar Creek Drainage, Wading River Drainage. State of New Jersey Health Department Regulations 5/24/67. (10)

Condemned Area Chart No. 4, of the N.J. Department of Health, Shellfish Program, shows the east shore of Barnegat Bay - all waters condemned for the harvest of oysters, clams and mussels. West shore of Barnegat Bay - all waters off Beach Haven West housing development, also all waters and lagoons at Barnegat Beach, Forked River - condemned for taking oysters, clams and mussels. Also, the condemned area includes all lagoons dredged for the purpose of providing access to property and/or the dockage of boats are condemned for the harvest of oysters, clams and mussels. Penalty for taking oysters, clams and mussels from condemned areas - $100.00. (11)

POLLUTION ON THE EASTERN SHORE OF BARNEGAT BAY

During the War, the Army built a long dyke in Barnegat Bay starting at Twentieth Street in Barnegat Light and going in a northwestern direction for about four miles.

Twentieth Street was extended through the entire length of the dyke which sealed off the north south tidal flow, blocked navigation, and set up conditions of stagnant water from Twentieth Street north to the Inlet.

Also, in recent years a developer has built several hundred houses on this dyke, in the development known as High Bar Harbor. In the process all the osprey nests and shore birds were eliminated. The development to date has no sewers, and cesspools draining into the Bay may cause pollution.

We have repeatedly requested the N.J. State Department of Conservation and Economic Development to build a bridge at Twentieth Street, but nothing has been done to date. A bridge with twenty-foot clearance would allow passage of two small boats, and would allow for a north-south tidal flow, thus eliminating pollution. We urge that this bridge be built without further delay. (13)

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State of New Jersey
DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
ROBERT A. ROE, COMMISSIONER
TRENTON 25

OFFICE OF THE COMMISSIONER

July 31, 1968

Mr. Lester M. Klashman, Reg. Director
U. S. Department of the Interior
Federal Water Pollution Control Admin.
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Dear Mr. Klashman:

I regret that the Department of Conservation and Economic Development was unable to participate in the public hearing that was held June 27 in Wilmington, Delaware.

We agree wholeheartedly with the closing paragraph of your letter of June 14 in which you state that our coastal waters are among our most precious resources. In order to insure a continuance of this resource we have purchased 34,454+ acres of wetland to furnish protection to the estuaries.

The following is my written statement presented for the record in which I present our answers to the questions raised in your letter:

1. What are the values of an estuary?

    Aesthetic - My free-hand interpretation of this definition is that, to be of aesthetic value, an object must at least at times impart a sense of pleasure to the viewer.

    Although restricted somewhat by necessity and circumstances, man tends to spend as much of his leisure time, and to a lesser extent his productive time, where he most enjoys being. And estuaries, although not desirable in all their varied aspects at all times, are heavily utilized, and becoming increasingly so. The variety of aesthetic opportunity presented by an estuary is considerable. Ocean, sand spit, bay, marsh and upland, and the creatures and vegetation associated with all can be found in or viewed from an estuary. The activities of aesthetic value that can be had in an estuary are practically innumerable.

Fishing, hunting, bird watching, crabbing, photography, wading, swimming, boating, clamming and a myriad of other activities associated with the natural resources of an estuary all have inherent in them a measure of aesthetic value. Also, there are persons who derive their aesthetic enjoyment from estuaries merely through their senses, by sight, smell, sound, feel, etc. And, further, an estuary's aesthetic value cannot be measured solely by those who tread upon it. Viewing the panorama of an estuary from a high vantage point such as millions of people do annually is regarded by many as an aesthetically valuable experiment.

Personal - The personal values of an estuary are not reflected alone in the estuary itself. Aside from those businesses that are in the immediate vicinity of the estuary so as to capitalize on its "people-drawing" potential, there are those on the routes to the estuaries, sometimes thousands of miles away, that are benefited. Personal values can be assigned to real property such as lands, land improvements, buildings, businesses, industry, and commerce, for example. There are those personal values too that a person imparts to natural resources which he harvests, whether he sells them or not. In reality, it is the natural resources, together with the utilitarian and recreational uses of water, and the aesthetic appeal of the estuary that constitute its real value to man. Without them, use of the estuaries by people would likely be minimal if at all as would property values. Unfortunately, the emphasis in estuarine management appears to have been toward the development and protection of property without adequate consideration to the resources upon which the value of that property is dependent. Marinas, dredging of lagoons, marsh filling and home construction and other forms of development have increased substantially over recent years in our estuaries, but the collection and application of information related to the management of the estuarine natural resources has been lagging. Conflicts arising from uses to which estuarine areas are put cannot be overlooked, but must be reconciled. To have value, the estuary must be used by man, and to facilitate this, there must be development. Perhaps in its initial phases such development can be carried on without the necessity to give appreciable concern to the resource, but with increasing development there must be increasing attention given to the well-being of the resource, or else it and the personal property values will surely suffer.

Recreational - The recreational value of an estuary is the result of use by people for enjoyment alone. It seems impractical not to include aesthetics in this category as well as all of the other enjoyable activities that might be indulged in, to segregate the two merely on what appears to be only a difference in the degree of physical activity. Senior citizens, for example, might derive as much recreation from watching water skiers as the skiers get from participating.

Some of the more common forms of recreation in estuaries are swimming, water skiing, boating, fishing, crabbing, clamming, bird watching, skin diving, hunting, and nature study. There are others. To my knowledge, there have been no studies made in this State that have developed recent man-day use values per-acre specifically for estuaries for any of these activities, except possibly for hunting. Further, a study completed for 1952 (Hamer) estimated that a half-million fisherman days were spent on New Jersey's Atlantic Coast which brought between $7-8 million dollars into the area. These figures have been substantially increased, possibly tripled. However, no new information has been collected to substantiate any of the current estimates. Information relative to other activities should be sought elsewhere for the present. A recently initiated comprehensive estuarine research project is expected to provide valuable up-to-date information on man-day use of estuaries sometime in the next few years.

Dollar - A realistic estimate of the dollar value of an estuary can only be compiled by adding the values of the individual entities. Present studies will contribute substantially to the dollar value of the estuaries. The study now being carried on by the Marine Resource Committee under a grant from the Baruch Foundation will produce substantial information.

2. How have they been damaged by pollution and how much?

Pollution in New Jersey's estuaries ranges from little to severe. Some of the more heavily polluted areas in the highly developed and industrialized portions of the State appear to be regarded as irretrievable. The marshes are being filled with all types of solid waste with the assumed intent that they will someday be suitable for industrial or other development. Few people are still present that can recall conditions in these estuaries when they were not so badly polluted. Poor land use practices causing siltation, industrial and domestic wastes as well as other activities have contributed to the condition. Certainly in such areas the aesthetic value of the natural estuary has been lost.

In general, the most heavily polluted estuaries, or portions thereof , are located in the northeastern part of the State, from Raritan Bay north and in the portion of the Delaware and its tidal tributaries between Camden and the Delaware Memorial Bridge. In these locales, gross pollution has minimized all values except for those of commerce and, with some possible exceptions, industry.

Euthrophication has become serious in much of the northerly portion of Barnegat Bay and its tidal tributaries. This has resulted in excessive growth of aquatic vegetation and occasional fishkills. High bacterial counts associated with this condition has also limited water-contact activities on occasion. It is supposed that this condition has also had an adverse effect upon all values considered, though information on the extent is lacking. This condition is occurring in an increasing number of smaller localized areas elsewhere as well.

Shellfishing for sport and industry has been severely affected as the result of the closing of a large percentage of the beds to protect people from pathogens, particularly hepatitis, that are introduced via domestic waste discharges and transferred to people using the pathogen-carrying shellfish for food.

More specific information on the extent of damage due to estuarine pollution is lacking. Present studies will establish the extent of Pollution and resultant damage.

3. What do you think the future of our coastal zone should be?

The coastal zone presents conditions that are highly desirable for many things. None of the benefits of the natural resources the coastal zone has to offer can or should be denied those who need them. This means that the various uses must be made as compatible as possible. Although "home rule" by the smaller governmental units has and continues to prevail with regard to planning and zoning, there should be a large plan for the coastal zone, possible State or federal, to which the local planning can be made to conform.

Speculatively, industries could be located in and operate as blocks wherein centralized waste treatment facilities could operate and research problems of waste treatment and disposal. Each industry would have a representative to the Waste Treatment and Disposal Committee wherein pressure by industry upon industry under the threat of enforcement of strong governmental regulations would bring about the desired result. In such an arrangement, wastes could be used to treat other wastes, the varied expertise of the industries could be pooled to solve problems, a pooling of funds for the purpose of waste treatment research could be effected, and zoning would have taken into considerationthe disposal area to be used by the industrial block as it would for domestic wastes. Hopefully, this approach would minimize pollution as a problem and make the varied uses of the coastal zone more compatible. All other uses of the coastal zone would be included in the plan with adequate consideration given to the fact that fish and wildlife require large acreage with varied habitat in order to be diverse with regard to species and sufficiently productive to provide for a reasonable amount of use by the public. Also, "open spaces", to provide for enjoyable recreational experiences by the many who would use them, would by necessity, have to be large. In comparison, industrial complexes would be small. The State should re-affirm its ownership of the tidelands so that conformance with such a coastal zone plan would be more easily facilitated. For this plan to be effective, there would have to be among others, changes in the tax structure so that all areas of a State could share in an equitable manner the available tax revenue.

This is by no means considered complete, but I feel it adequately portrays the approach that must be taken to resolve the problems being created by the varied uses to which our coastal zone is and might continue to be put. Planning by happenstance and opportunity are increasingly becoming passe and unaffordable. Already significant portions of our coastal zone have suffered what might prove to be irreparable damage. Developing a plan and changing established practices that would make it acceptable and workable appears to be the only approach that can be taken if the course of development in our coastal zone is to be favorably altered.

4. What are the best uses of our estuaries?

There are uses to which nature has put estuaries and which man has not duplicated, or been able to. Estuaries are essential to a wide variety of fish, birds and mammals; they represent a unique environment with a correspondingly unique flora and fauna; and because of their innate uniqueness, they have particular characteristics that are desirable and used by man. The question, therefore, should be - 'In view of our present and anticipated needs for the natural resources of our estuaries, how much of them can we afford to remove from production and use for other purposes?' My answer to this would preferably be "none" but I consider it appropriate in view of current needs to answer "very little and that which is removed should be made recoverable". My basis for this position is that in time, the production of the estuaries will be critically needed to support our expanding population. Presently, the United States has a low population density and food production is more than adequate. However, nature abhors a void and there will come a time, not anticipating strict measures to control human reproduction, when the need for food will surpass production. At present, priority should be given to the preservation of highly productive estuaries as it should to highly productive farmland with this eventuality in mind. And, although land or water areas of estuaries might be sacrificed to other uses, more should be understood with regard to their relationship or interdependence before any such decisions are made.

The current best uses of the estuaries are all those to which they are put. Best uses should be based on current and anticipated needs. A frequently reviewed and updated plan for our coastal zone, with adequate implementation, appears the best approach toward attempting to assure that uses of our estuaries are the best to which they can currently be put.

5. What system of management, local, state or federal, will best provide for the development and protection of our estuarine resources?

All should be involved. The federal government should provide a general coastwise plan and guidelines within which the states can work. They should also provide specialized types of technical assistance and partial financial support for planning; they should also provide partial financial support to the states to assist them in conforming to the plan, particularly where acquisition is required. The states after consultation with local governments should develop a plan in detail and specific guidelines for lesser governmental agencies to follow. Acquisition would be at the state level with management in conformance with state regulations carried out, where appropriate, by local agencies with financial assistance from the state. Local planning would have to conform with county, county with state, and state with federal.

Also, there must be an active program to gather the data on which to update plans, such would include both basic and applied research on the estuaries and the effect of established conditions upon them. Such studies by necessity must be long range and comparable. Again, the Division of Fish and Game's recently initiated estuarine research project is expected to provide a significant portion of this information and, if kept up to date, at least in part, it could continue to serve as a valuable tool in planning the estuaries.

Sincerely yours,

Robert A. Roe,
Commissioner

RAR:jg

THE SHELTER ISLAND OYSTER CO.
GROWERS AND PACKERS OF OYSTERS AND CLAMS
Phone: Greenport 7-0512
GREENPORT. L. I., NEW YORK

August 1, 1968.

Mr. John S. Farlow,
Regional Coordinator, National Estuarine Pollution Study,
North Atlantic Water Quality Management Center,
Edison, New Jersey, 08817.

Dear Mr. Farlow:

I am very sorry that I was unable to attend the "Invitation to Public Meeting on Impact of Pollution on our Coastal Waters", on July 23, 1968 in Caspay Auditorium, in New York City.

I have been connected with the seafood business since 1922. I went into the distribution of shellfish and opened my own business in 1928. Since that date, I have been constantly engaged in the propagation, cultivation and distribution of Oysters and Clams.

In 1950, I employed over 150 men and women, engaged solely in the growing and distribution of "OYSTERS", under the trade name of Shelter Island Oyster Co. and my other affiliated companies. In the past three years, I did not market a single bushel of "OYSTERS", and therefore, had no employees engaged in the handling of "OYSTERS". A drop of 150 persons engaged in this operation.

This is typical of conditions of the entire "OYSTER" industry in the Long Island area of New York State. In the past thirty years, the Oyster Industry supported a minimum of sixty companies engaged in the handling of Oysters, in addition to all of the other industries, such as shipyards, transportation, barrel and box manufacturers and other supplies, necessary to the Oyster Industry. Today there are less than six companies engaged in the handling of Oysters in the Long Island area.

This loss in production of "OYSTERS" is mainly due to the pollution of our waters. The microscopic Oyster larvae has very little chance of survival in the Polluted waters. Therefore, there is no reproduction of Oyster seed. Without Oyster seed, the Oyster industry cannot succeed.

We hear so much about the tremendous increased interest in Oceanography, and the tremendous production of protein rich food that should be produced from the Sea, with new research. We have in "OYSTERS", one of the richest protein foods available to the human race. In the past thirty years, we have lost more than ninety percent of the production ot this protein rich food.

Let us concentrate on cleaning up our waters and recapturing the production which we know can be accomplished, by past history, before venturing into new research for the unknown production of Oceanography.

Yours very truly,

John L. Plock.

JLP/ak

Mr. Chairman, Congressman Leonard Farbstein wants me to convey his regrets and apology for not being able to appear on this occasion. He is delighted, of course, that such a formal meeting is being held in New York and has asked me to read the following statement of his thoughts on the national estuarine pollution study.

The rapid influx of population along our national shoreline has posed a clear threat to the pollution of estuarine waters. The Congress recognized this when it authorized a study of estuarine resources under the Clean Waters Restoration Act of 1966.

At present, 75% of our population lives in states bordering our seaside and Great Lakes. The rapid population growth and industrialization of shore areas predicted for the next twenty years provides adequate warning against any delay in developing an estuarine management plan -- backed with regulatory authority to implement the provisions of the plan. Any delay will endanger countless bays, estuaries and tidal streams -- waterways that the American public have a right to expect to be clean and open to them for recreation, sports and relaxation.

The work which this study group will accomplish today and in the months ahead has major implications for the future management of our most neglected land and water resources. In addition to the detailed investigations being carried out as part of the study, I think the frank exchange of views among public and private organizations having an interest in estuarine resources will lead to the best possible management plan to be submitted to Congress by November 1969.

Many areas have already been so severely damaged by pollution and other environmental changes that restoration must obviously be the first phase of the management plan.

Just recently, on July 18th, the Department of Interior made its annual report on fish killed by pollution. The figures are shocking. Over 11½ million fish were killed in 1967 in 40 states, a whooping increase of 21% over 1966. A close look at these figures shows us the danger in industrial areas like New York. The biggest culprit by far was industrial pollution accounting for over 70% of the total fish killed. Another major cause of pollution was municipal operations, particularly sewage systems. Local municipalities and counties must strive to curtail pollution caused by their own operations if they are going to lead the way in combatting pollution.

During the past few years there have been several incidents of pollution on the Hudson River - the massive fish kill at Indian point, the death of water fowl from commercial oil spillage, and the decline of the commercial fish catch.

The sources of pollution are several and this indicates to me the importance of close cooperation between the various levels of government as well as private industry and conservation groups. Ultimately, the elimination and control of pollution must be accomplished on the local level where it takes place. The Federal government can act as a catalyst and a general policy maker but success requires local initiative.

The Congress must not await, though, the findings of the estuarine study on pollution before moving on other fronts. We must turn our attention to other surveys and urgent matters of estuarine protection.

The House recently passed a bill (H.R. 25), which calls for a nationwide inventory and a study of the feasibility of establishing a conservation system of estaurine areas. It seems clear to me that strong Federal, State and local participation in policing esturaries and coastal wetlands is long overdue. No vested interest, either public or private has a right to destroy the natural beauty of coastal areas in the name of profit or for convenience. In my judgement, these lands should be preserved and made wholly accessible to all Americans to enjoy.

Effective nationwide controls are also needed to protect against filling and dredging operations which are continually encroaching on estuaries. Such operations are carried out mainly by the Corps of Engineers for navigation purposes, and by many local developers as well, simply because a nearby marsh or off-shore area is the easiest and cheapest place to deposit the spoil from dredging or other earth-moving work. So it is that they pollute the estuarine waters and destroy the adjoining wetlands.

To meet this problem, I have joined with 112 House Members representing 26 states in sponsoring a bill which would curb dredging operations. Specifically, the measure is aimed at prohibiting the Department of Army from dumping or approving the dumping of spoil material from dredging operations into any navigable waters unless the Secretary of the Interior shall first determine that to do so will not result in the pollution of such waters.

This is vital legislation and I look forward to its passage by both Houses. To carry out its provisions effectively, the Interior Secretary will undoubtedly need the technical findings and management plan developed by this study group. I urge, therefore, that special attention be given in your investigations to dredging in the New York-New Jersey region.

You may not be aware, Mr. Chairman, that several years ago the Regional Plan Association, as part of its comprehensive open space research project, canvassed all conservation groups in this area for information on specific areas worthy of being incorporated in a proposed regional park and open space plan. Locations along the coastline and inland reaches of streams were identified. Further identification of such costal resources is needed. I think that this type of data, as well as the collaboration and consultation of the Regional Plan Association, would be very useful to your study.

Mr. Chairman, we must not allow future public or private development projects to encroach upon our shrinking coastline. It is my hope that the Federal Government, in cooperation with responsible local agencies, will continue to support a systematic review of estuarine pollution conditions in this region. The protection of estuaries will be further strengthened by the establishment of a National Estuaries and Coastal Preservation System which might follow the existing pattern of protection given to our coastal national parks, wildlife refuges and recreation areas.

As I stated earlier, we must move to prevent further pollution of estaurines and strive to restore and make available as much of our coastal lands as possible to the American people.

This, I believe, is what the public expects of government as the means of preserving the scenic, economic, wildlife and other ecological values of our estuarine resources.

Thank you.

JERSEY SHORE BRANCH
AMERICAN ASSOCIATION OF UNIVERSITY WOMEN
76 Darlington Road
Deal, N. J. 07723

July 12, 1968

Mr. John S. Farlow
Regional Coordinator, National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Sir,

We, the Jersey Shore Branch, American Association of University Women, have received invitations to public meetings for the National Estuarine Pollution Study. The first of these was held in Wilmington, Delaware on June 27, 1968 and the other (at which we plan to have two representatives) to be held at Caspary Auditorium, Rockefeller University, N. Y. We would like to submit the following written statement applicable to both public meetings.

We are in agreement with your Report on Pollution Of The Navigable Waters of Eastern New Jersey, Shark River to Cape May, dated September 1967, as regards values of an estuary, extent of damage by pollution, the future and best uses of our coastal zones and estuaries. We are basically in agreement with your proposals for the system of management to best develop and protect our estuaries. However, we feel that presentation of the problems our area now faces with water pollution, economically and aesthetically, needs to be stressed more emphatically to encourage greater concern on the part of the general public so that it in turn will support legislators in favor of prompt action toward pollution abatement, and will urge the incumbents to review their positions and take more aggressive measures.

Sincerely,
Mrs. T. B. Blaisdell
Mrs. T. B. Blaisdell
Community Problems Area Representative

CHEMICAL INDUSTRY COUNCIL

OF NEW JERSEY

PLEASE ADDRESS REPLY TO:
Witco Chemical Corporation
277 Park Avenue
New York, N. Y. 10017

August 5, 1968

Mr. Lester M. Klashman
Regional Director
U. S. Department of Interior
Federal Water Pollution Control Admin.
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Dear Mr. Klashman:

Attached is statement of The Chemical Industry Council of New Jersey prepared for the National Estuarine Pollution Study July 23, 1968 Meeting in New York City.

Our original intent was to have a technical representative of The Chemical Industry Council of New Jersey make this statement at the aforementioned meeting. However, we subsequently learned that written statement could be submitted by August 12; therefore; we did not have representation at the July 23 meeting.

As the newly elected chairman of The Chemical Industry Council of New Jersey, I can assure you of our continuing interest and involvement in water resources management, and our support of the broad objective of improving water quality where necessary.

Sincerely,

Max A. Minnig

Max A. Minnig
Chairman
Chemical Industry Council
of New Jersey

cc Mr. J. S. Farlow
Regional Coordinator
Edison, N.J.

STATEMENT OF THE CHEMICAL INDUSTRY COUNCIL OF NEW JERSEY AT THE MEETING FOR THE NATIONAL ESTUARINE POLLUTION STUDY
NEW YORK CITY, NEW YORK, JULY 23, 1968

Gentlemen:

This statement represents the views of the Chemical Industry Council of New Jersey. In our statement presented at the meeting of your committee in Wilmington, Delaware on June 27, 1968, we indicated our continuing interest and involvement in water resources management, and, as part of the public, our support of the broad objective of improving water quality where necessary. It was emphasized that in order to keep our goals in tune with reality, it was necessary to (1) separate fact from fancy, (2) continually update our knowledge, and (3) balance the values.

Before considering some of the specifics of the area of interest today - the tidal and coastal waters of New York and New Jersey from Cape May northwards - we will comment on some of the general aspects of estuarine pollution.

1. Estuaries and coastal waters cannot be considered separately from the watersheds or river basins of which they are the termini.

2. Pollution is but one aspect of the total problem of water resources management.

3. The application of water resources management principles to river basins necessarily involves the bordering lands and populations and inevitably the entire socio-economic system of the watershed.

4. It is possible, practical and desirable to apply the multi use concept to watersheds if the socio-economic needs and values are to be satisfied. It is not only the uniqueness and complexity of each estuary but the individuality of each basin and contiguous society which will determine the distribution of uses.

5. Some uses are obviously incompatible with others. There is a need to develop plans to identify which areas of a watershed are best suited to which uses. This means that in the light of a growing economy and expanding population the aquatic environment will not be maintained in or restored to its pristine state, nor may it be desirable to do so.

6. The distribution or allocation of uses will of necessity be subject to change as technical knowledge and technology advance and as relative values change.

7. It is imperative that the decision making public be informed of the costs involved in obtaining the conditions they think they desire, since in the final analysis it is not federal, state or local government or private industry which bears the cost of improving water quality, but you and I the taxpayers and the consumers.

8. Wherever feasible, existing institutional arrangements should be utilized in carrying out water resources management programs. Where none exist, they should be created at the lowest organizational level compatible with a watershed or regional approach.

Relative to the area under consideration at today's meeting, we offer the following comments:

a. In compliance with the provisions Water Quality Act of 1965, New Jersey submitted to the Secretary of Interior and received approval of the classification of the various watersheds including bays estuaries and coastal waters in the State. Included in the program as approved were plans for implementation and a time schedule for achievement. The formulation of the program was generated by the cooperative effort of the New Jersey State Department of Health and the State Department of Conservation and Economic Development, thus reflecting a broad spectrum of interests. Through a series of public hearings, the opinions of local government, industry and private citizens was obtained and reflected in the final version of the program. Implementation of this program is now underway, and the full impact is anticipated in the early 1970's.

b. In the last several years, conferences on the Hudson River and Upper New York Bay, and the Raritan River and Lower New York Bay, in which the Interstate Sanitation Commission, New York, New Jersey and the FWPCA participated, have resulted in the promulgation of programs to upgrade these waters. These have been incorporated in the respective State plans.

We urge that in your recommendations to Congress, no proposals be included which would alter the programs initiated by the States. Instead, we feel you should recommend to Congress that it increase financial assistance in implementing these programs, and offer financial and technical assistance in evaluating the effectiveness of these programs in achieving the desired water quality goals. In this way, delays due to lack of financing would be reduced or eliminated, and the experience and knowledge gained from the existing programs will be fully utilized, thus enhancing our ability to plan more complete and effective new programs.

Aug. 6. 1968

Mr. John S. Sarlow,
Edison, N.J.

Dear Sir:—

I am greatly interested in preserving Burnt Fly Bog in Marlboro Township, Marlboro, N.J., as a conservation area. It is an area consisting of 1,700 acres, running in both Monmouth and Middlesex Counties. It should not only be preserved for its natural beauty and wildlife, but also for its vitally important water resources.

If the dumping of garbage in the Bog continues, the water supply of twenty-one (21) municipalities could very well be affected. It could lessen the water supply and contaminate it.

Another estuarine area would be lost forever. Far too many have been lost already.

Please give this letter your careful consideration. Thank you.

Sincerely,

Harriet E. Roach

1118 N. Front St.
Lincroft,
N. J.
07738

SPORTSMEN'S COUNCIL
MARINE DISTRICT OF NEW YORK STATE, INC.
Affiliated with New York State Conservation Council, Inc.
P. O. Box 1266 Long Island City, N. Y. 11101

STATEMENT OF JOHN A. BINNER

I am a Director of the Sportsmen's Council Marine District of New York, Inc. as well as a Director of the New York State Conservation Council, Inc. and Chairman of its Marine District Committee. Also, I am a member of New York State's Marine Fisheries Advisory Committee. My interest in the marine sport fishery in New York State covers several decades.

During the past ten years I have noted a general decline in the populations of a number of species of fish in New York marine waters: such fish as the weakfish, summer flounder (fluke), seabass, porgie and whitting. Statistics of the commercial and sport fishery in New York confirm the relatively low population levels of these species.

While there may be a combination of causes for the decline of these fish, there is no doubt in my mind that one contributing factor is the constant flow of harmfull pollutants into our coastal waters from the Hudson River and other smaller rivers and streams; waters polluted by industrial and domestic wastes as well as by agricultural chemicals. And, more recently, there has been added the threat of harmful pollution by radioactive wastes as well as by thermal pollution from the increased use of nuclear power plants.

Mr. David Wallace, Deputy Director of Fish and Game for the Marine Region, New York State Conservation Department, has reported to you his estimate of the value of the sport fishing industry in New York's marine waters. He reported that "an estimated one million sport fisherman enjoy fishing for striped bass, porgies, flounders, fluke and bluefish, and other marine and anadromous species.

To promote the conservation of the fisheries in the Marine District

These fishermen contribute approximately 75 million dollars to the economy of the coastal area each year."

From the above it is obvious that the marine sport fishery in New York State is not only "big business" but is a valuable and important recreational outlet for its residents.

New York can ill afford a continued downward trend in fish that contribute so much to its economy and recreation. Neither can its neighboring states where a similar decline in the sport fishery also has been reported.

There is hope that as tidal estuaries are cleaned up fish populations will increase. It is not yet too late but it soon may be.

Thank you.

John A. Binner

John A. Binner

NEW YORK UNIVERSITY MEDICAL CENTER
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ANTHONY J. LANZA RESEARCH LABORATORIES AT UNIVERSITY VALLEY
LONG MEADOW ROAD, STERLING FOREST, TUXEDO, N.Y.
MAIL AND TELEPHONE ADDRESS: 550 FIRST AVENUE, NEW YORK, N.Y. 10016

August 6, 1968

Mr. John S. Farlow
Northeast Region, FWPCA
14th Floor-John F. Kennedy
Fed. Bldg.
Boston, Massachusetts 02203

Dear Mr. Farlow:

I attended the meeting in New York in connection with the National Estuarine Pollution Study, on 23rd July. Prior to the meeting, I saw no reason to prepare a statement outlining our research in this institute, but as I listened to those giving evidence at the meeting I began to realise that information about the condition of the Hudson River was small indeed.

Rather than deliver an unprepared statement at the meeting, I preferred to prepare it subsequently. Your secretaries assured me that my written statement would be included in the transcript of the meeting. I enclose a summary account of our work with some interpretation of their significance. In addition I am sending the texts of two lectures given by me and a colleague at a recent meeting in New York City sponsored by New York University.

Should you require more detailed information about our program I would be happy to submit to you copies of our recent progress reports.

Yours sincerely,

G. P. Howells

G. P. Howells
Assistant Director
Laboratory for Environmental
Studies

GPH/ec
Enclosure

Statement of Gwyneth Parry Howells
Assistant Director, Laboratory for Environmental
Studies, Institute of Environmental Medicine
New York University

This laboratory, since 1964, has been following a program of investigation of the ecology of the Hudson River from Manhattan to Saugerties. These studies have been biological, chemical and geological.

The biological study has been to record as fully as possible the fauna of the river. Intensive studies of zooplankton in three principal sectors of the river have been made. These sectors are at Inwood (in a mesohaline zone), at Indian Point (in an oligohaline zone), and at stations north of Cornwall (fresh water). A comparison has been made of shore and midchannel fauna, and between the river and its tributaries. This study has indicated that the mainstream of the river is less polluted than its shores or tributary streams. The clarity of the Hudson River water is always low: part of this is due to sediments such as silt, fly ash and plant debris, but some is also due to the abundance of plankton in these rich waters; estimates of zooplankton are 200/liter and above in the summer. A number of species of algae, diatoms and microinvertebrates in the samples, especially from the shore, are those characteristic of polluted and eutrophic conditions.

Another biological program has sampled young fish by shore seining. A number of sites on the west bank of the river between

Inwood and Cementon have been sampled consistently by the same technique every summer since 1964, so that the relative abundance of young fish of about 20 commonest species can be assessed year by year.

Our physico-chemical studies have been concerned with the levels of radionuclides in the river and biota, and with the levels of trace metals and pesticides. The study of radionuclides has continued since 1964. The nuclide contributing most radioactivity to the water and the biota is the natural ^{40}K, with about 1/5 pCi/l river water, north of Cornwall, and about 22 pCi/l south of this. Other naturally occurring nuclides are ^{226}Ra and ^{228}Ra, but levels are very low (about 0.1 pCi/l water). Fall-out has contributed some fission products, and the level has progressively declined since 1964 when samples were first taken; in water the levels are now very low, about 0.5 pCi/l. Some activation products are observed, also at very low levels. Some of the plant species in the river accumulate these nuclides, for example ^{54}Mn, thus providing a useful monitor of activation product activity released into the river.

The analysis of trace elements and important anions in the river water is a recent development in our program. Concentrations appear to be very variable both in time and at different sites, the lack of pattern indicating the haphazard origin and fate of trace substances in such a river system.

A study of pesticides has been made on the water, sediments, plankton and fish, together with a monitoring study using fresh water and marine shellfish as accumulators. Levels in water are extremely low, except during the spring run-off, but none-the-less the biota accumulate relatively high levels of a variety of pesticides and their metabolites as well as many unknown organic substances. No studies have yet been made of the biological effects of the observed concentrations of pesticides on the biota of the river.

Geological studies have been made of the nature of the sediments of the river bottom, of the distribution of foraminiferan shells (indicating past sea water intrusions), and a preliminary investigation made of the exchange capacity of the muds for trace metals.

The data derived from our surveys, together with information from other sources on the nature and flow of the freshwater source and sea water intrusions into the lower Hudson, indicate that the long 150 miles of water act as a brackish lake, rocked north and south by the influence of the tide. However, the inflow of fresh water is small in relation to the tidal flux, and a rough estimate suggests that exchange in this part of the river is between 7%/day of the total in spring and only 1/2%/day in midsummer. The biological surveys indicate that potential nuisance species of algae and diatoms are already present but not yet rampant in the Hudson River. The future uses of the river imply that more water will be extracted for industrial and domestic use, more sewage (even though subjected to secondary treatment) will be added as the population density increases, and more heat, will be added to the river. Our evidence, and the history of other bodies of water, point to the development of eutrophic and even dystrophic conditions as this course proceeds. The question remains as to how irreversible dystrophic conditions can be avoided. First, it is clear that the strongest measures should be applied to maintain the water quality by controlling effluents, including heat, from local communities, large and small industries, and even from private residences and boats. Secondly, if more water is withdrawn from this stretch of the river, it should be extracted as far as possible downstream as to be compatible with the water requirements, so as to maintain the volume of flow as much as possible and to restrict sea water intrusion. Lastly, control of spring run-off by impoundment of water at suitable sites would improve flow and exchange during summer drought periods without adverse effects in spring, provided that the impounded water is released to the river, and is not conveyed by conduits outside of the river system.

The Present Biological Status of the Hudson River

Gwyneth Parry Howells

Department of Environmental Medicine
New York University

(Text of lecture given May 24th at the Hotel Commodore, New York in a Symposium on Oceanographic Problems and Needs of New York, sponsored by the New York University School of Engineering and Science and submitted to the Journal of Environmental Science and Technology for publication).

The Present Biological Status of the Hudson River

Introduction

The efficient exploitation of water resources depends on the co-operation of industrialists, engineers, scientists, conservationists but above all, of people, who create the demand for both clean water and its use as a carrier for wastes. The delicate balance of biological, chemical and physical factors in an aquatic ecosystem is always changed, and the natural developmental changes accelerated, as a result of man's activities.

The development of an area in terms of population and industrial growth, or of intensified agriculture, or river "development", is always accompanied by the enrichment of water bodies by nutrients, and sometimes by heat. This accelerates the natural aging of waters which is called "eutrophication". This process frequently interferes with the multiple uses of water, reduces its aesthetic value, and threatens to destroy the water source.

Eutrophication is still imperfectly understood and difficult to measure in quantitative terms, although we recognize some aspects such as the reduction in clarity of the water, the development of plant growths, and even the production of undesirable odors or tastes. Eutrophication may or may not be a desirable development. It is a process which increases the productivity of natural waters and this is utilized in the establishment of fertilized, artificial fish ponds and of shellfish hatcheries in some countries. However, because chemical enrichment of the water generally favors those species that naturally accompany eutrophication, the resulting fish or shellfish may be valuable only in places where the criterion for success is measured in terms of protein weight (for food) rather than quality. The most successful species cultured in this way are rarely those prized by fishermen or epicures, or even by biologists.

One of the obvious results of advancing eutrophication is the excessive production of phytoplankton and of rooted shore plants. The growth of these organisms interferes with the recreational uses of the water, it may impede shipping, it may produce filtration problems in industrial water use. It may also develop unacceptable tastes or odors to drinking water which may carry through to food fish or shellfish living in this environment. The algal growth may even proceed so far that it creates a biological oxygen demand in place of oxygen production in conditions of low light intensity, and may, by blanketing the surface, prevent natural gaseous equilibration of lower waters with oxygen in air. In addition, some algae can produce substances which are directly toxic to fish or other animals.

Understanding the development of eutrophication of any natural body of water requires information about physical and chemical properties of the primary water supply, and of any organic material or toxic materials which are added to it. It is also advantageous to have some knowledge about the whole of the drainage basin and of its geology and geochemistry and of its land use. Then, it is most important to identify biologically the biota of the water body and to study their nutrient requirements, their behavior to toxic materials, and their relationships to one another (as in a food web), as well as the dynamics of the whole ecosystem in terms of nutrients. This is a requirement of perfection and it is doubtful if we will ever gain as much knowledge as we need about even a few small and dynamically simple bodies of water. Usually it will be necessary to make decisions about water use and water treatment on the basis of grossly inadequate knowledge and we have to trust that our generalizations will suffice for predictions about most waters. However, the Hudson River is of such importance for navigation, domestic and industrial water use, as well as for recreation, that it is imperative that we know more about itsspecific problems.

Specific Problems in the Hudson River

I would like to put forward the view that a large part of the lower Hudson River has the characteristics of a eutrophic brackish lake; the hydrographic conditions may prove critical in the biological sense. At a time when increasing population, increasing industrialization and the concomitant rising demand for water for all purposes is an inevitable course in the Hudson River area, it is clear that our understanding of the situation and its possible remedies in the river are all too inadequate.

Several groups have become interested in finding information about the Hudson River in recent years. Among them are a group from New York University who between 1964 and the present, have been following changes in water quality and biota over a 100 mile stretch of the river roughly between the Tappan Zee Bridge and Inwood in the south, and Coeymans in the north (Ref. 1, 2, 3). This study has the purpose of establishing an inventory of plant and animal species, of documenting the biological history of the region in a time of change, and of identifying indicator species of eutrophication or pollution and also those which might be used as monitors of potentially toxic pollutants.

The stretch of the river investigated has the physical characteristics of a "drowned river" and its channel can be traced well out into the Atlantic. At the northern limit of the estuary (at Troy) the river bottom is still 4 feet below sea level. In the region studied, the lower part may be termed "mesohaline" with salinities varying from about 23 ^{o}/oo to 10 ^{o}/oo, (2/3-1/3 SW) and then "oligohaline" from 10 ^{o}/oo to 2 or 3 ^{o}/oo (1/3-1/10 SW). As the sea water pushes up the river at flood tide it tends to form a wedge of denser saline water at the bottom of the river bed. Since the Hudson River is deep ($>$ 100 feet in some parts), this saline water should remain near the bottom, but in fact only relatively slight ($<$ 1 - 2 ^{o}/oo) differences have been seen and our conclusion is that the water gets well mixed in this part of the river.

The freshwater inflow into the river at Troy varies from 25,000 cfs during the spring runoff (e.g. May 1966) to a minimum 1600 cfs recorded during the summer of 1965 in a drought period (Ref. 4). Super-imposed on this, dwarfing the fresh water flow is a massive tidal flux. The flux is so massive that at the flood of "spring tides" in the summer there appears to be no downstream flow in the river at all. This has been demonstrated by dye studies where the distribution of added dye in the river was followed for 14 tidal cycles (1 week). At the head of the tide at Troy, the tidal excursion was only 3 miles, while the velocity of net movement of the dye mass downstream was 1.4 miles/tidal cycle. However, at Kingston and stations south of this, while the tidal excursion was 8 or 9 miles for each tide, there was no net movement of the dye mass (Ref. 5). On the other hand, the relatively uniform salinities seen in the river (with depth) and the fairly low salinities recorded at Inwood (from 1 ^{o}/oo during spring to about 10 ^{o}/oo during the summer) suggests that the net inflow of sea water through the Verrazano Narrows is also small. What we appear to have is a seiche-like movement of brackish water, impelled by the ocean tides. The implication for pollution and eutrophication are clear: this large volume of water (at a guess, 150 miles x 1/4 mile x 30 feet) is behaving as a brackish water lake rocked north and south by the influence of the tide. The inflow is sufficient for only 1/2 to 7%

to be exchanged each day (assuming no evaporation or rain). Hence effluents and nutrients discharged into this brackish lake will, as in a true lake, be recirculated between the water and the biota until irreversible eutrophic conditions are reached, with little opportunity for this volume of water to be cleansed by either a freshwater or sea water inflow.

The freshwater inflow at Troy already carries a relatively high concentration of nitrogen and phosphorus into the lower Hudson River. A large quantity of treated and untreated organic sewage is added daily, the peak being from Albany to Hudson, and near Manhattan. A study of the total phosphorus in the Hudson shows that there is a maximum concentration of 12 μg-atoms / 1 at the southern tip of Manhattan. Of this total, 70% is present as inorganic phosphate, 16% is present as particulate material (incorporated into plankton) and 14% is present as dissolved organic phosphorus (Ref. 6). In general, it is reported that the total phosphorus in river water is higher than that of lakes but this value is high by any measure. Lake Washington (Seattle), where eutrophication is slowly being reversed by a costly sewage diversion, has a phosphorus concentration of 7. 5 μg atoms / 1. , and it has been stated that 2. 8 μg atom / 1 is the approximate upper limit of unpolluted water. A theoretical relationship has been deduced that

Oxygen demand = oxygen supply from photosynthesis when there are concentrations of 2.6 μg atoms / l in winter, and 1.7 μg atoms / l in summer (Ref. 7). On this basis, we might expect that in the Hudson River, at least in the stretch south of Albany, and around Manhattan, where phosphorus levels are high, there will be net oxygen depletion. This has been demonstrated in field studies.

Similarly, nitrogen levels are high, although all of this nutrient is not so clearly derived from domestic sewage. Complete analysis of the nitrogen cycle is considerably more difficult than the phosphorus cycle because the nitrogen is present as nitrate, nitrite, and ammonia nitrogen, and the effects of nitrogen fixation or denitrification by bacteria also complicate the picture. Nitrate in water can act as a reserve of oxygen, even with appreciable concentrations of dissolved oxygen; in anaerobic conditions nitrogen compounds are reduced to ammonia or even to nitrogen. The cycle is complex and related to dilution, oxygen and temperature. Similarly sulphate is reduced to sulphides by bacteria in anaerobic or near anaerobic conditions.

The relatively high sulphate (from sea water intrusion) and nitrate both from added sewage and feeder tributaries in the Hudson River means that anaerobic or near anaerobic conditions may tip the balance between a healthy river and a noxious one producing hydrogen sulphide and ammoniacal gases.

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Biological Developments in the Hudson River

The Hudson River is potentially rich in biological resources. It has a large population of endemic fishes and a tremendous migrant population of diadromous fishes-those species that live in both the sea and fresh water. It is unlikely that the river was ever a salmon spawning ground, but there are records of Atlantic salmon being caught in the river, and a serious attempt was made to introduce both Pacific salmon (in 1873) and Atlantic salmon (from 1882 to 1896) (Ref. 8, 9). However these attempts were not successful and the adults never established a spawning run. The Hudson in the past has been famed for commercial shad and sturgeon fishing.

Again, there was once a flourishing oyster fishery, now destroyed by pollution, and while clams are still plentiful in appropriate areas, they are unfit for human consumption because of pollution (Ref. 9). On a much more personal level, many sport fisherman who use the Hudson for their recreation say they cannot eat their catch because of their unpleasant oily flavor. What are the reasons for this decline? First, the growth of population and industry has changed the physical conditions of the river by impoundments, dams, dredging and similar works. Then the use of river water for industrial purposes has added some pollutants. A large and growing population in the area uses the river as a drain for untreated or primary treated sewage. Development of agricultural lands adds sewage as well as agricultural fertilizers, pesticides, and herbicides. These influences may increase the fertility of the river as well as adding toxic materials; however, the changes are not always those sought by fishermen, anglers or water engineers.

Fish in the Hudson River

We have some historical accounts of the abundance of fish in the Hudson, as well as records of commercial catches over a long period, but the bulk of our scientific knowledge is from a survey published in 1936 by the New York State Conservation Department (Ref. 8). This report lists 91 species of fish for the lower Hudson. In 1966, however, 11 species were most commonly caught and 22 other species were found occasionally. Tables 1 and 2 indicate what may be the commonest species of fish in the Hudson in 1936 and 1966. Some caution is needed in interpretation: the 1936 (June) survey used seine nets on shore and gill nets midstream, as well as other fishing methods using lines and traps. The 1966 survey was restricted to shore seining on the west bank of the river and these collections were principally of young fish in their first year. Another difference may lie in the slight seasonal difference since a number of the young fish recorded as most abundant in 1966 belong to migratory species whose presence and abundance in the river may be seasonal.

With caution, the changes to be seen in 30 years seem to be as follows:

(1) Increasing numbers of "coarse fish" such as carp and goldfish which were only "common" in 1936 but 14th and 9th respectively, in 1966.

(2) In 1936, F. heteroclitus was only 1/3 as frequently caught as F. diaphanus. But in 1966, F. heteroclitus is 5th, and close to F. diaphanus.

(3) Silverside (Menidia) were only "moderately common" in 1936, although reported present in considerable numbers in August/September. However it ranked first in 1966.

(4) "Alewife" was reported in text as "abundant" in 1936, but was not frequently caught; it appears rather more common in 1966.

(5) The number of species seined in 1966 is much smaller than in 1936. Is this a reflection of increasing pollution? (90 species in 1946, 33 in 1965, 29 in 1966).

Commercial aspects of the fisheries in the Hudson River presents an alternative view. The Hudson River has been exploited for its fish since the area first became populous. The catches varied naturally year by year, but in recent years, 1945 may have been a peak year in terms of total catch). The fishing effort (in terms of boats and men employed) continued to increase until 1945 beyond which there is a decline. A part of this is attributed to the general tendency of a wealthy community to consume less fish, but is also partly due to a decline in the quality of the fish, and a decline in the catch per unit of effort. The shad has been an important food fish in the river since the first settlers arrived in the area. In the long history of the shad fishery, there were two periods of peak abundance, 1877-1901 and 1936-1949. The decline may be attributed to over-fishing or to other causes such as the restriction of the spawning grounds, the deleterious effect of dredging (which destroys spawning sand banks), and pollution, especially in the Albany-Hudson stretch. Of all these changes, the most significant seems to be over-exploitation of the fishery since the abundance of the fish is more closely related to the proportion of time when nets are fishing, then to any other factor.

Striped bass is a fish native to the Hudson, but while some are resident in the river, others move out to sea and migrate up and down the coast. This species spawns between Bear Mountain and Kingston. The population is underexploited in the commercial sense although it is popular as a sport fish and the adults are well able to tolerate the highly nutrient, low oxygen waters of the Hudson. It deserves to be conserved; however, little is known about the optimum breeding and nursery conditions for this fish.

Sturgeon are represented in the Hudson by two species, the short-nosed and Atlantic sturgeons. The latter spawns in the Hudson and spends its juvenile life there (to 12 years) and is often needlessly destroyed when it is caught in commercial gill nets. The other species is resident in the river throughout its life and grows more slowly. At one time there was a flourishing fishery for both sturgeon and caviar but the abundance of the fish began to decline about 1875. Attempts to propogate the fish by artifical spawning methods have been unsuccessful. While sturgeon fishing is now restricted by a size limit, there is little evidence of a return of the early abundance of these fish. In addition, almost nothing is known about the effects of pollution on the development of the eggs and larvae, or of the statistics of population growth of the sturgeon and it seems that this valuable biological asset may be lost to the Hudson by neglect.

Alewife and Blueback Herring are also migratory fish coming into the Hudson seasonally. These fish are also unexploited although a good food source.

A parallel decline in the commercial shellfish industry is seen. The bulk of shellfish beds in the Hudson lie in the Raritan Bay area and most of this has been destroyed by domestic sewage pollution. The stretch of the river between Hastings and Ossining is thought to have some potential for oyster culture, but salinity here is fairly critical for the commercial oyster species. Both hard and soft shell clams are also possible commercial species, if pollution can be controlled.

Invertebrates and Microorganisms

While most non-biologists consider only the fish population of a river, this represents only the top of a broad-based pyramid of animal and plant life. Nutrients in the water are converted by photosynthetic activity to single-celled algae and diatoms, and these provide the "grass" on which a population of minute animals can graze. These small animals, in turn, provide the food for young fish and larger invertebrate animals. Hence, in considering the biological status of the river, we have to give much attention to the plankton, the immense population of floating animals and plants in the water. The waters of the Hudson are always turbid to some degree; while some of its brown color is due to sediments suspended in the water, much is due to the presence of plankton. At the end of April this year our samples of water collected from the river were green because of the spring growth of algae and diatoms. At this time, the waters are brown since the spring algal bloom has temporarily exhausted itself, and is replaced in part by a flourishing growth of copepods, small crustaceans which are important as a food for fish and shellfish.

It is difficult, because of lack of knowledge, to draw conclusions about changes in the composition of the plankton during the past 50 years. It is only relatively recently that the importance of the plankton growths of a river have been recognized. In 1936, the Conservation Department studied plankton in the lakes of the Hudson watershed, but not in the river itself. The collections of invertebrates reported then were largely to establish an inventory of species and to study the food supplies of a few fish species, and were not in any way quantitative. Now we have much more information about the microorganisms of the Hudson, but it is not clear what changes are taking place. I will try to summarise our information briefly.

Collections mid stream (from the water and the river bottom) and along shore have shown two contrasting environments inhabited by different populations of animals and plants. Our shore collection sites are characterised by snails such as Lymnaea and Physa and brackish water shellfish; by larger crawling crustaceans such as Gammarus and isopods, and inshore shallow waters by shrimps, prawns, and crayfishes. But they are also prolific in a number of organisms considered as indicators of domestic sewage pollution. Among these are nematode worms (round worms), Tubifex, filamentous blue green algae such as Phormidium and Oscillatoria. In addition, large bacterial and fungal masses have been observed at many sites, especially in the northern reaches. The mid-stream samples on the other hand, are characterised by abundant algae and diatoms, including some species indicating eutrophic conditions, and by a rich fauna of copepods and other small crustacea. We also find many rotifers (20 species) (not associated with sewage pollution); other polluted waters (such as the Delaware River, Lake Erie, or the Raritan River) appear to have a more restricted fauna of rotifers. The protozoan fauna is also rich, with about 30 identified species, fewer from shore collections.

Our studies of the main stream (by following sectors across the width of the river at four stations at Inwood, Indian Point, Cornwall and Saugerties) have shown that the micro-organisms, like temperature and salinity, are relatively uniform with depth and across the channel. Moving from the most southerly site at Inwood to the most northerly at Saugerties, there is a natural succession from brackish water species to freshwater ones; the distribution varies a little from year to year. But a large proportion of the micro-organisms in the plankton are collected throughout this 100 mile stretch of the river and appear tolerant of salinity differences of this order. They are truly at home in this brackish water environment.

What will the future be?

Our studies have been undertaken to give us the information needed to make predictions of the future course of the river. We can safely predict an increasing use of the river for industrial and domestic purposes, and also the increasing use of its water to augment existing drinking water supplies. There is also projected a pumped storage scheme at Cornwall, and an increased use of water for cooling nuclear reactors. The changes we can postulate are then: First, physical ones: a diminution in water flow due to increased use, and the diversion of large volumes through pumps and turbines. Secondly, an increase in nutrient materials derived from agricultural expansion and from an enlarging population. A reduction in water flow will accentuate this. Thirdly, an increase, overall and in specific localities, in the water temperature, as more water is used for industrial cooling. Lastly, we might postulate an increased outfall into the river of toxic pollutants such as pesticides and trace metals.

How will these changes affect the biota of the river? The physical effect of pumps and turbines in the river system has been compared to that of a giant predator, eating up, rather indiscriminately, a proportion of the population. The effects of a predator are not always bad, as every fisherman who is frustrated by a large population of undersized fish, well knows. The removal of a part of the population often allows the survivors to attain more rapid growth. But if the predation exceeds the natural recovery rate, then the productivity (in terms of fish weight/unit water volume) must decline. While protective grids at water inflows can save larger fish, young fish, or fish eggs, along with the plankton of the river on which fish larvae feed, will be entrained. Water treatment (such as chlorination) and heating, as well as pressure damage in turbines, may damage these entrained organisms. Hence, the proportion of the river flow which can be used for such purposes is limited, unless some successful remedial measures are applied to repopulate the waters with young fish and their food plankton.

The increase in nutrient materials in the river will necessarily increase the process of eutrophication. As the waters become richer, the blue green algae (especially Oscillatoria) and some objectionable diatoms, will bloom with increasing explosiveness, as in other polluted waters - such as Lake Wasington, Lake Erie, the southern part of Lake Michigan. The abundance of a few species of this nature produces dense crops generally considered a public nuisance. Mats and floating masses of algae may be produced, and if the process continues, deoxygenation of deeper waters occurs. The only remedy for such a situation (as has been demonstrated recently with Lake Washington) is to direct the sewage outfalls to alternative water systems, or to remove chemically and biologically, at least a proportion of the nutrient material in the sewage e.g. Thames. The saturated muds of polluted lakes acts as a reservoir of nutrient material for many years.

The third change, of increasing temperature, also brings far-reaching effects. In the classic studies in the Potomac and Patuxent rivers it has been shown that as environmental water temperatures change from $<90^o$ to $>90^o$, the species making up the micro fauna and flora will change. For instance, the green algae tend to be replaced by the less desirable blue green algae. There is a reduction in the variety of organisms as the less heat tolerant cannot survive in competition with the others. There is a loss of protozoa and an increase in microbial growth, perhaps because the reduced protozoan population no longer browses on them.

There are changes in fish populations also. Above 90° F some fish endemic to the Hudson may be killed e.g. the freshwater Killifish F. diaphanus can survive to 100° F, but not at hotter temperatures. Fish tend to move into the warmer discharge areas near effluents, but they become very active and cannot feed since there are few insect larvae in these areas. However, this tends to increase the sport fishing potential of such an area.

The planktonic copepod Acartia (present in the Hudson) shows a critical dependence on temperature at the time of egg laying. If there is a change in temperature greater than 6° C (= 11° F) there is complete destruction of eggs and larvae. This would deplete the food supply for young fish, and also remove the population cropping algae and diatoms.

Again, many invertebrates such as soft-shelled clams, oysters and crabs are directly or indirectly affected by temperature changes.

The effects of increased temperature need not all be bad ones. The warm effluent water from power stations, together with nutrients derived from sewage can be used for fish or shellfish culture, since growth can be stimulated. Experimental and field studies of such projects are being carried out in Japan and United Kingdom, and other countries, including the United States.

Conclusions

To summarize my remarks about the biological state of the Hudson River today, I would say that it is a river rich in life and rich in potential for industry and recreation. But because of its hydrological characteristics, and because it flows through an area of heavy population, and great economic development, it is important that the use of its waters be strictly controlled.

TABLE I

Commonest species of fish in the Hudson River - June 1936

Collected from 60 localities by seines and gill nets, shore and mid-channel. Derived from frequency with which these species were caught.

1. Common sunfish, *Lepomis gibbosus* (pumpkinseed)
2. Common sucker, *Catostomus commersonnii* (mullet)
3. Golden shiner, *Notemigonus crysoleucas* (roach or bream)
4. Johnny darter, *Etheostoma nigrum*
5. Yellow perch, *Perca flavescens*
6. Red bellied sunfish, *Lepomis auritus* (bream)
7. White perch, *Roccus americanus*
8. Common shiner, *Notropis cornutus*
9. Largemouth bass, *Aplites salmoides*
10. Black nosed dace, *Rhinichthys cataractae*
11. Freshwater Killifish, *Fundulus diaphanus*
12. Common bull head, *Ameiurus nebulosus*

TABLE II

Commonest species of fish in the Hudson River, July/August 1966

Collected from 9 localities by shore seining on west bank of the river.

Derived from the catch per unit area seined.

1. Northern silverside, Menidia menidia (or common silverside)
2. Blueback herring, Alosa aestivalis (summer herring)
3. Freshwater Killifish, Fundulus diaphanus
4. Spot-tail shiner, Notropis hudsonius
5. Marine Killifish, Fundulus heteroclitus
6. Common sunfish, Lepomis gibbosus (pumpkinseed)
7. Johnny darter, Etheostoma nigrum
8. White perch, Roccus americanus
9. Goldfish, Carassius auratus
10. Golden shiner, Notemigonus crysoleucas (roach or bream)
11. Striped bass, Roccus saxatilis (rock bass)
12. Shad, Alosa sapidissima
13. Alewife, Alosa pseudoharengus

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Trace Contaminants in the Hudson River

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(Text of lecture given May 24th at the Hotel Commodore, New York in a Symposium on Oceanographic Problems and Needs of New York, sponsored by the New York University School of Engineering and Science).

Trace Contaminants in the Hudson River

Introduction

In reviewing the information available on the trace contaminants in the Hudson River it is important to consider the major sources of both organic and inorganic pollutants. The three leading sources of these contaminants are sewage, industry and agriculture. In addition certain pollutants may be produced by biological materials as a secondary effect of one or a combination of the three major sources.

The principal pollutants found in sewage are of course organic wastes, bacteria, surfactants and nitrate and phosphate as degradation products of the primary materials. Industrial sources produce organic contaminants such as oils, food processing wastes, meat packing wastes, paper mill wastes and a host of synthetic organic materials. Inorganic wastes from industry will include metallic ions, various acids and mineral materials.

Agricultural operations are a major source of fertilizers through run-off as well as significant contributors of animal wastes which in some areas exceed the human sewage input. Pesticides are contributed mainly through agricultural operations. The biological materials are principally aquatic rooted plants, algae, and bacterial or fungal slimes which may result in disagreeable ordor or taste effects in the aquatic system.

In considering the effects of the input of pollutants to the Hudson River system, it is of interest to consider not only the seasonal flow variation, but also the net excursion and general pattern of distribution of pollutants by this system. Published figures from the United States Geological Survey (Busby, 1966) have shown the peak flow of the Hudson River to occur in the March to May period. Maximum flows at this time of year are generally in the range of 20,000 to 50,000 cubic feet per second, and the flows during the July to December period may be as low as 2,000 or 3,000 cubic feet per second in a severe drought year such as 1965. Tidal volumes range from 200,000 to 500,000 cubic feet per second and are far more significant in terms of movement of pollutants on a short term basis than are the freshwater flows. However, there are times of several days duration when successively increasing flood tides produce net northward movement, even during the spring period of more substantial freshwater flow.

The results of a tracer dye study by the FWPCA (Hohman and Parke, 1966) are shown in Figure 1. The data were obtained in August 1965, during a low flow period averaging about 2800 CFS. As would be predicted, the tidal excursion is largest in the lower reaches of the estuary but the net seaward flow was nil from 20 to 40 miles north of the Battery and extremely difficult to measure even as far north as 60 to 90 miles. Only at 110 miles or more from the Battery did the river show a precise downstream seaward movement. Thus pollutants introduced in an extremely large segment of the river may be expected to spread north as well as south and their removal must depend on sequestration into the sediments or biota during much of the year, with flushing probably occurring only during the higher spring flows.

Radionuclides

In general the concentration of natural, fallout and activation product radionuclides are near the lower limits of detection of the methods used for measurement of such elements.

As seen in Table I the general levels of artificial radionuclides from either fission product or activation product sources have shown a decreasing trend in the period 1965 to 1967 (Eisenbud, et.al., 1968). Fission products from fallout may be expected to continue in this manner as long as the source of the materials continues to be controlled resulting in a decreasing input. On the other hand activation products which arise principally from nuclear reactors are expected to show an increasing trend as additional power stations are installed along the river.

The natural radionuclides ^{40}K and the ^{226}Ra and ^{228}Ra demonstrate the normal level of radioactivity in the Hudson River. As can be seen from the table the major part of the activity in the river is due to ^{40}K. Artificial radionuclides contribute about 1 to 4 orders of magnitude less activity than the natural sources at the present time. In the Hudson River south of

West Point natural ^{40}K contributes an even greater proportion because of the higher salinity of the water in the more seaward part of the river.

Trace Metals

The Public Health Service has published a summary of the results of a sampling and analysis surveillance of the Hudson River at Poughkeepsie (USPHS, 1965). The results as shown in Table II provide estimates of the normal concentration of trace metals in the Hudson River for that period at a single point in the river.

In contrast to these results, the data presented in Tables III, IV, and V represent sampling and analysis performed in the on-going program at New York University. In both Table III and Table IV considerable variability is noted in the levels of the various trace metals at different locations along the river. Considerable variability also occurs as expected, on a seasonal basis due to the variation in freshwater flow and the mixing influences of the tides. In Table V an example of this behavior in 1967 is noted for the element Cadmium comparing both sampling station of the river and time of the year. The March samples were obtained prior to the spring thaw and peak freshwater flows due to both thaw and rain.

These data indicating variable levels of contamination of a number of toxic metals are of particular interest. Sprague (1968) has demonstrated an avoidance reaction for salmonid fish with as little as one one-hundreth (5 ug/l) of the toxic level of zinc in fresh water. While the avoidance reaction in natural systems required approximately 20 times higher concentrations than those in the laboratory, some of the levels of trace metals noted in these data are in the range required in natural systems. Little or no information exists about the effect of combinations of trace metal contaminants.

In 1965 McCrone (1967) investigated the sediments of the Hudson River in relation to the trace contaminant pollution observed in the water samples. Table VI and VII present typical findings for approximately 30 miles of the river from 40 to 70 miles north of the Battery. The sediments in this reach of the river contained moderate amounts of organic matter, but the bulk of the ion exchange capacity of these sediments was found in the organic portion as noted in Table VI. The major exchangeable ion was noted to be hydrogen ion and experiments on the replacement of the hydrogen ion by alkali or alkaline earth elements showed that it was extremely difficult to remove. No work has been performed on the potential capacity of the sediments to take up manganese, copper, iron or nickel in these experiments. The concentration of these elements on a weight basis represents about 20 to 500 ug/g in contrast to ug/l (ug/1000g) levels in associated water samples. A concentration factor of about 1000 fold between water and sediment appears typical of many of the pollutants encountered in the estuarin system.

Pesticide Residues

A 60 mile stretch of the river has been sampled to obtain information on the presence and variability of pesticide residues of significance in estuarine systems. Typical limits for quantitative determination of residues in both aqueous and solid samples are shown in Table VIII. These are compared to detection limits recommended in a recent review article (Nicholson, 1967).

In Table IX a brief summary of some of these results is compared with data obtained by the Public Health Service near Poughkeepsie (USPHS, 1965). Again the significance of the time of the year in sampling is most apparent. The typical spring values given, which were found at several stations along the river, indicate input from agricultural runoff which would be missed when sampling only in the fall.

In the spring of 1968 a 100% kill in an artificial spawning system was observed and associated with elimination of fungus growth on fish in the system (Grimm, 1968). These effects were noted in a system which was being supplied directly with a continuous flow of fresh water from the Hudson River. The 100% failure of the hatch was noted at the time of a heavy thunderstorm period accompanied by particularly heavy sedimentation of the stream flow near the site from which the river water was being pumped. However, it is not clear if the mortality was due to the physical nature of the sediments, or to residues carried by them.

Sediment sampling along the river has resulted in a similar demonstration of a rise in levels from a few ng/g for a number of chlorinated pesticides to a range of 25-100 ng/g shortly after the heavy spring runoff. The concentrations declined to the previous low level at essentially all sites within another one to two months. The buildup of materials such as pesticide residues in the biological system has been noted many times (e.g. Woodwell et.al, 1967). This study was made in a Long Island marsh, which has been sprayed over a number of years with DDT, building up a considerable concentration of DDT in the upper layers of the sediments of the marsh. A similar survey is in progress on the Hudson River ecosystem and the results are compared to those of Woodwell in Table X. The use of DDT has been stopped in the marsh studied by Woodwell based on the conclusions that some species had already attained residue levels near the lethal level. No control exists on input to the Hudson River where a similar pattern is occurring. Plankton and bivalve samples show the presence of over 20 chemical species tentatively identified as herbicides, fungicides, insecticides or general preservatives such as chlorophenol. These appear to exist at levels similar to those of the compounds given in Table X. With the exception of DDT, bivalve samples removed from untreated waters have essentially undetectable amounts of these compounds present. (Generally two orders of magnitude lower than the results in Table X).

Conclusions

The current efforts at amelioration of pollution in the Hudson River are focussed on the obvious untreated sewage discharged from the many population centers along the river. However the data presented in this report indicate serious and numerous sources of toxic pollutants with signficant potential for major biological effects on the overall estuarine system. The apparent variety of source locations and extremely complex interaction due to both tidal and seasonal flows make monitoring of the river to determine the exact or even approximate pollutional cause of any noted biological effect extremely complex and in fact almost impossible in many cases.

It is probable that only pollution source monitoring will provide the needed information and the necessary controls to result in the elimination of significant interactions with the biological systems.

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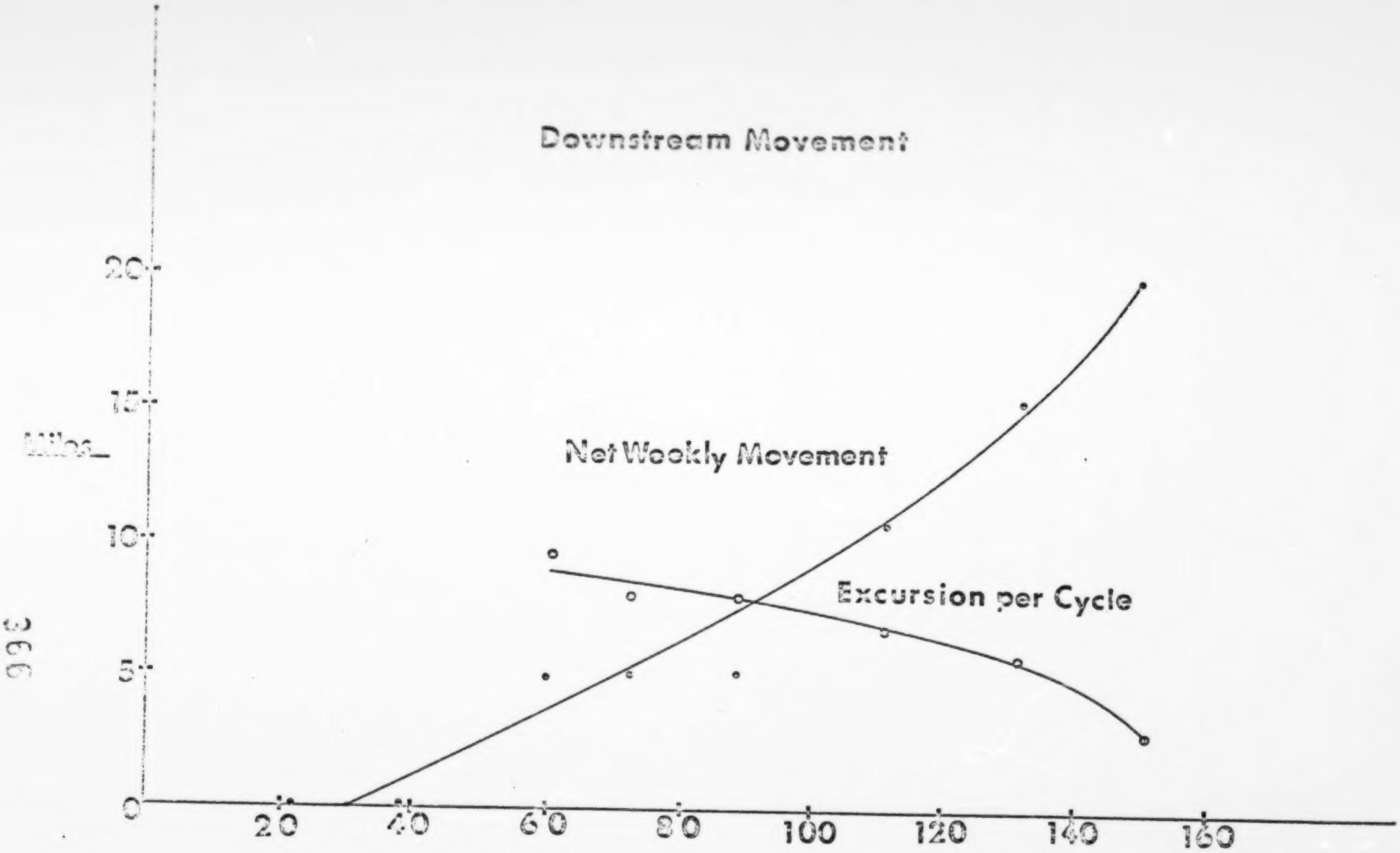

Figure 1. Miles from Battery at Introduction

Table I

Radionuclides in Hudson River Water North of West Point

	Percent Occurrence in Samples	1965 (a) pCi/l	Percent Occurrence in Samples	1967 (a) pCi/l
^{40}K	39	1.55	87	1.23
^{226}Ra	33	0.19	53	0.05
^{228}Ra	72	0.14	40	0.03
^{54}Mn	61	0.12	67	0.05
^{60}Co	50	0.08	47	0.02
^{106}Ru	39	0.27	60	0.16
^{137}Cs	72	0.19	60	0.03
^{144}Ce	67	0.56	60	0.12

(a) The 1967 results represent averages for samples.taken monthly from June to October at six sites. The 1965 results included nine sites from June to August.

Table II

Occurrence of Minor Constituents in Hudson River at Poughkeepsie
October 1962-September 1964

	Percent Occurrence	Average Concentration of Positive Samples ug/l	Minimum Level of Detectability ug/l
Zinc	100	57	-
Cadmium	0	-	1.0
Arsenic	0	-	10
Boron	100	34	-
Phosphorus	75	23	4.0
Iron	100	58	-
Molybdenum	25	9	2.0
Manganese	75	2.1	0.8
Aluminum	100	32	-
Beryllium	0	-	0.03
Copper	100	11	-
Silver	0	-	0.3
Nickel	0	-	1.0
Cobalt	0	-	1.0
Lead	50	10	3.0
Chromium	75	6	3.0
Vanadium	0	-	2.0
Barium	100	26	-
Strontium	100	103	-

Table III

Trace Metals in the Hudson River (a)

July-August 1965
ug/l

Mile No. (b)	40	43	46	51	66	70
Fe	130	10	70	80	120	30
Cu	78	12	86	40	17	250
Ni	44	15	24	18	39	16
Mn	400	1	44	38	12	1
Zn	310	4	260	220	14	16

(a) McCrone, 1967
(b) Miles from Battery

Table IV

Trace Metals in the Hudson River

November 1966
ug/l

Mile No. (a)	27	45	67	86	Sterling Lake
Fe	60	50	95	130	27
Zn	6	8	9	15	14
Mn	3	6	7	7	7
Cu	22	260	51	245	60
Be	0	0	0	0	0
Sr	570	280	130	135	30
Co	0.5	1	0.5	3	1
Ni	4	1	1.	2	0.8
Cr	1	0.5	3	4	1

(a) Miles from Battery.

Table V

Cadmium in the Hudson River
ug/l

Date	Tarrytown 27 (a)	Indian Point 41 (a)	Bear Mountain 45 (a)
3/2/67	140	45	9
4/13/67	3	3	5
5/12/67	9	< 6	< 6
6/20/67	12	< 6	< 6

(a) Miles from Battery

Table VI

Hudson River Sediments

Organic Matter	5.5%
Total Nitrogen	0.2%
C/N Ratio	13
Cation Exchange Capacity Total	35 meq/100g
Cation Exchange Capacity-Organic	72% (of total)

Table VII

Exchangeable Cations in Sediments meq. /100g

H	30.4	Na	0.8
Ca	5.3	Mn	1.2
Mg	3.6	Fe	1.
K	0.3	Cu	0.04

Ni 0.07

Table VIII

Quantitative Detection Limits for Selected Pesticide Residues

Pesticide	Solids-ng/g	Aqueous ng/l	Recommended Aqueous Limits ng/l
Lindane	0.6	2.4	5.0
Heptachlor	2.5	10.0	10.0
Aldrin	1.3	5.3	10.0
Heptachlor-Epoxide	1.2	4.8	10.0
DDE	2.0	8.0	
Dieldrin	2.0	8.0	10.0
TDE	2.5	10.0	20.0
o,p DDT	4.0	16.0	20.0
p,p DDT	15.0	60.0	20.0

Table IX

Chlorinated Hydrocarbon Pesticides in the Hudson River
ng/l

Pesticides	PHS Fall 1962	PHS Fall 1964	NYU Spring 1967	NYU Fall 1967
Dieldrin	<1	8	2	2
Endrin	ND	ND	-	-
DDT	ND	ND	230	ND
DDE	ND	4	50	ND
DDD	<1	ND	170	ND
Aldrin	ND	P	5	ND
Heptachlor	ND	ND	ND	ND
Heptachlor Epoxide	ND	ND	12	ND
Lindane	P	ND	6	P

ND - Not Detected
P - Presumptive

Table X

DDT Residues in the Food Chain
ng/g

	Long Island Marsh	Hudson River Tidal Marshes
Water	0.05 Est.	ND-0.2
Plankton	40	100-400 a
Bivalves	420	30-70
Fish	1,000	50-300 b
Birds	3,000-20,000	----

(a) Channel Samples
(b) Water, Plankton and Bivalves represent ranges for 1967 samples, April through November. Fish samples were available only for April, 1968.

STATE OF NEW YORK • EXECUTIVE DEPARTMENT

OFFICE OF PLANNING COORDINATION

880 THIRD AVENUE • NEW YORK 10022

July 15, 1968

Mr. John S. Farlow Regional Coordinator
National Estuarine Pollution Center
North Atlantic Water Quality Management Center
Edison, N. J. 08817

Dear Mr. Farlow:

This is to inform you that my office and I do not plan to read a statement at the public meeting on July 23, 1968. We would appreciate auditing the entire meeting, and request that Miss Concepcion Tan, Associate Planner, in charge of natural resources planning on Long Island in my office, be permitted to attend.

We enclose an office brochure and a statement for your records. They describe our functions as a State Planning Agency and the specific efforts related to your area of interest.

We appreciate your invitation and hope to hear from you soon about our request to audit the meeting.

Sincerely yours,

Howard S. Quinn, Director
Metropolitan New York District

HSQ:jw
cc Concepcion Tan,
 Associate Planner
Encl.

Statement for the Files July 15, 1968

Metropolitan New York District
N.Y. State Office of Planning Coordination

We are the agency responsible for long range planning for the State of New York. Enclosed is a brochure showing our organization and our major functions - state planning, coordination, research and local planning. It also describes our District Offices.

Our district office in New York City covers Nassau-Suffolk, Mid-Hudson and New York City planning region. At present, we are more involved in the estuarine environment in the Nassau-Suffolk Region. We are sponsoring and in some instances doing various surveys and reports in the areas of natural resources, recreation, environmental health, and in cultural and social development. Our study findings assist in developing State policies and in supplement local county and the bi-county planning programs. We work closely with the Nassau/Suffolk Regional Planning Board. We also serve as one of the State members of the Marine Resource Council of the Nassau -Suffolk Regional Planning Board.

Most of our surveys and analysis are being done by appropriate State agencies and some by consultants or our own staff.

The studies specifically involved in the estuarine area, are as follows:

1. Wetland Inventory - This is a survey to identify the wetlands in Long Island and to develop a program to preserve them. It is now being done on a Town basis by the State Division of Fish and Game, Sayville, L.I., N.Y.

2. Marine Fisheries Study - This is a study on the commercial and sport fisheries off the shores of Long Island. It determines the value to the community, the effect of pollution on the marine life, and a program to develop and to promote the fishing industries. The study report is presently being prepared by the State Bureau of Marine Fisheries, Ronkonkoma, L.I., N.Y.

3. Sand and Gravel Study - This analysis is on the sand and gravel industry and its compatibility with residential development and natural and open space environmental. It also consider the effect of dredging for sand and gravel in the marine environmental. It is now being done by our staff in the Metropolitan N.Y. Office.

4. Environmental Health Survey - It is a general overview of the air and water pollution problems on Long Island. It includes the pollution problems in the bays and harbors. A report is being completed by our State Division of General Engineering, State of Health Department, Albany, N.Y.

State of New York Nelson A. Rockefeller, Governor

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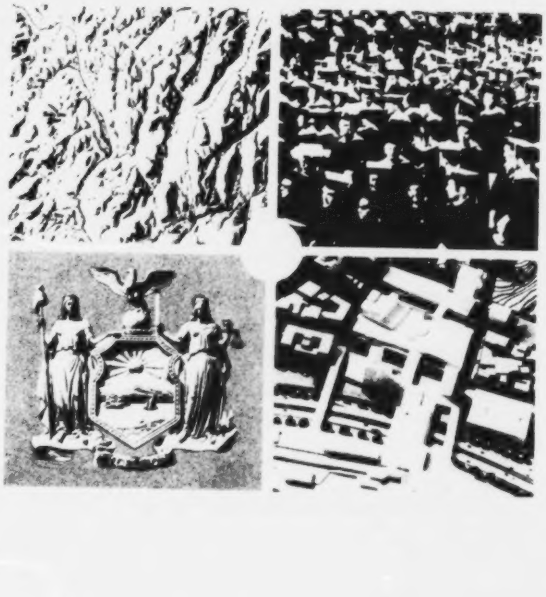
PLANNING

and new york state

PLANNING HAS BEEN going on ever since the world was created in a six-day comprehensive work program. Individuals, businesses and governments have always planned, to some extent. But modern planning is a systematic, long-range, wide-reaching procedure. Governmental planning benefits from techniques developed by business and from innovations made by city planners. Today most cities in New York State and many counties, towns and villages, as well as the state government itself, have formal planning programs to guide their growth. Such formal government planning began with city design and zoning control. For cities were hit first by the changes which now reach all Americans —



state planning

THE BUREAU OF COMPREHENSIVE PLANNING sets down those long-range goals which are the framework for planning the state's development — goals which are the basis for making decisions, setting priorities and measuring progress.

In coming years the bureau will adapt these long-range goals to changing conditions and demands. This means synthesizing state agency program goals and regional and community plans with the emerging needs of all sections of our society. Many of the basic goals of the people are expressed in the state's constitution and by its governors, its legislatures and its courts.

The **physical development unit** coordinates the use of land, air and water resources of the state for urban development, transportation and public facilities.

The **economic planning unit** deals with industrial expansion, government investment and other aspects of public or private planning which contribute to a healthy economy.

The **social development unit** focuses on the needs of the state's people in such social service areas as health, welfare, education, housing, recreation and public safety.

research

THE BUREAU OF PLANNING RESEARCH gathers, analyzes, interprets and distributes information related to planning, and tests alternate planning proposals.

Its **planning information center** is developing a computerized storehouse of all available data — from government agencies at all levels and from private organizations. It uses this information to summarize today's actualities and tomorrow's possibilities — in regional and statewide economic and population studies, in analyses of government performance, and in estimates of future needs. The results of this work are available for anyone involved in planning.

The **systems analysis center** develops statistical models to evaluate the alternate proposals which planning agencies are considering. This new type of analysis uses knowledge from economics, mathematics and social science to determine objectively the feasibility and impact of various planning proposals.

The **planning reference library** assembles and circulates material about planning in general and about planning in New York State in particular — books, government reports, journals and magazines, academic studies, etc.

coordination

THE BUREAU OF FUNCTIONAL COORDINATION helps other state agencies to translate the state's long-range development goals into current program services.

Its **state government programming unit** helps to coordinate the planning and programming of other state agencies. Its **intergovernmental programming unit** coordinates activities by local governments with those of the state, and monitors federal program activities as they relate to long-range planning.

A major tool in the bureau's work is the integrated Planning-Programming-Budgeting System. Bureau staff work with the planning units in each state agency, helping them to evaluate their agency's programs and to prepare program proposals. These are grouped into 10 broad areas — housing; education; health; social development; recreation and culture; protection, safety and defense; transportation; economic development; natural resource development; and general government.

Another tool are annual reports prepared for each of the 12 planning regions in the state. These cover all planning activity in the region, relating priorities and costs to the state's development policies.

THE BUREAU OF PLANNING ADMINISTRATON has central office responsibility for control and evaluation of planning assistance to local governments.

The **community planning assistance unit** administers the federal-state Urban Planning Assistance Program (UPAP). It sets standards for state-assisted local planning and does research on improving comprehensive planning by communities. This unit also works to increase local understanding by preparing booklets on such matters as zoning, subdivision control, federal grants and official maps; and by helping OPC district directors in conducting local seminars on the planning process.

The **special programs unit** administers two programs established under federal and state laws:

> The Appalachian Program aims to create a healthy economic climate in counties eligible for this aid. It uses selected public investment and encourages and attracts private investment into these areas.
>
> The Economic Development Program provides funds for technical assistance and public works in areas which meet certain unemployment criteria. Loans are also available for industrial plants, machinery and working capital.

local planning

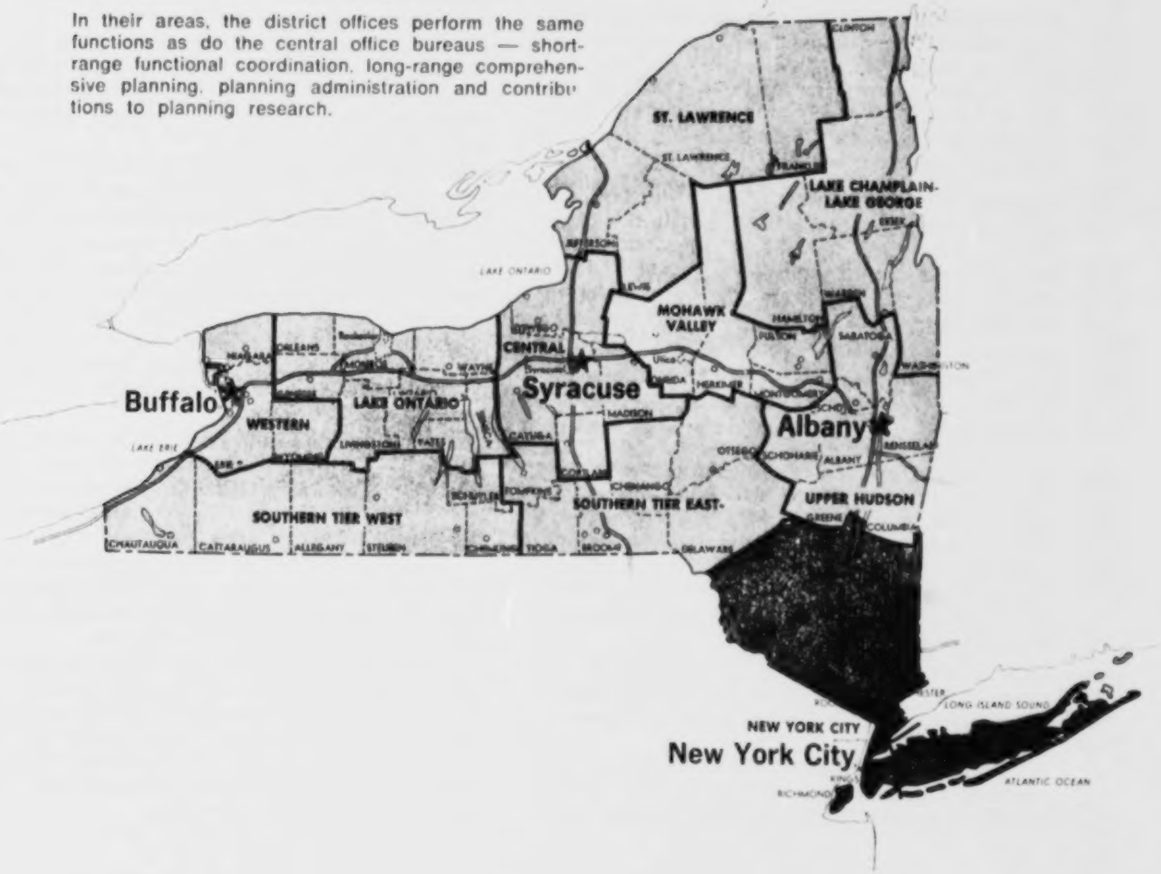
district offices

FOUR DISTRICT OFFICES OF OPC, with headquarters in Buffalo, Syracuse, Albany and New York City, link state planning activities to the 12 planning regions and to regional, county and local planning boards. They are responsible for providing technical planning assistance to groups within their areas and for maintaining a dialogue between local and state programs.

Each district office serves three planning regions and is the initial point of contact for local groups who want planning assistance. District staff members offer advice on such matters as planning and zoning; supervise the state-federal Urban Planning Assistance Program; and meet with local governments to explain and help with planning programs and problems.

Within each region, OPC is encouraging the county boards of supervisors to establish a regional planning board which will work closely with the district office in developing a regional plan. Each regional board is to be a center for the study, review and coordination of plans originating at all levels of government and in private organizations as well.

In their areas, the district offices perform the same functions as do the central office bureaus — short-range functional coordination, long-range comprehensive planning, planning administration and contributions to planning research.



New York State Office of Planning Coordination

— the automobile and more mobility, technological advances and more leisure, a shift from farm to city jobs and more crowded living, more demands by more people for more of the good life. Planning has evolved to meet these changes:

Planning programs cover wider areas. Because city problems do not halt at the city limits, metropolitan area planning arose. Because villages and towns can no longer ignore their surroundings, area and regional planning began. Because many problems cross state lines, federal and interstate planning developed.

Planning has more concern for people. Early planning stressed the aesthetic and engineering aspects of buildings, transportation and city design. Today, planning is concerned with the effect of the total environment upon people — their physical surroundings, their social development and their economic well-being.

Planning is more scientific. New techniques and tools are constantly developed to help the planner. Electronic data processing helps him to obtain and study more information. Systems analysis sharpens his understanding of how different activities relate to each other.

MODERN PLANNING TAKES PLACE at every level of government and for every functional activity within a government — transportation, health, recreation, education and welfare.

But it is essential to coordinate all this planning to avoid gaps, overlaps and conflicts. The New York State Office of Planning Coordination was created to help the Governor harmonize the planning of state agencies, and to relate their work with that of the local and federal governments and of private organizations — to provide more efficient and economical services to the people of the state.

NEW YORK STATE HAS A LONG HISTORY in planning. In the 1920s, under Governor Al Smith, it prepared one of the nation's first comprehensive regional plans.

A Division of State Planning, which became the State Department of Commerce, was formed in 1935 to provide funds and advice to help local governments with planning and zoning. In 1959, the Bureau of Planning in the Commerce Department expanded to administer federal-state grants for comprehensive planning by local governments.

Governor Rockefeller in 1961 formed the Office for Regional Development as the new statewide long-range planning agency. Its 1964 report, *Change/Challenge/Response*, set forth a 15-point action program designed to coordinate all planning in the state.

The Office of Planning Coordination, formed in 1966, combined these two functions of local and statewide planning in a central staff agency responsible directly to the Governor.

New York State was also among the first to institute an integrated Planning-Programming-Budgeting System. This system helps to translate long-range goals into specific operating programs and budgets, year by year.

MANY OF NEW YORK STATE'S PROBLEMS have been city-centered, and urban sprawl daily encroaches on agricultural and recreational land.

New York City has more of everything — rich and poor, business and traffic, culture and problems. The state's other urban centers, six of them with more than 200,000 people, have big-city problems too. Industries expand and move, transportation and housing become inadequate, air and water pollution endanger health, recreation is usually too far away.

The forecast is for more of the same: more people — a third again as many in 25 years; more urban people — 92 per cent of the state's population by 2000 A.D.; more cities — small communities growing and new ones forming.

Only concerted planning can preserve natural areas, repurify water, air and earth, save farmland uniquely suited for specific products, renew city centers and improve city suburbs.

With the formation of the Office of Planning Coordination, New York State took another step in its attack on these problems. Planning coordination means preserving the diversity that has made the state a social and economic leader. It means teamwork in solving problems that have become urgent.

MONMOUTH COUNTY FEDERATION
of
SPORTSMEN'S CLUBS

9 Locust Grove Lane
Englishtown, N.J. 07726

August 8, 1968

Mr. John S. Farlow
Regional Coordinator, National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Mr. Farlow:

Please accept the attached statement as part of the records of the public hearing, July 23, 1968, at Caspary Auditorium, Rockefeller University, New York City, in consideration of the impact of pollution on coastal and estuarine waters. The sportsmen in Monmouth County Federation, nearly 2000 members, have a profound interest in the subject under consideration, and appreciate the opportunity to express their views. Although representing only a portion of the sportsmen of the county, it is our firm belief that in this matter we are speaking for the majority of them as well as for others concerned with our wildlife and environment. The interests of the federated sportsmen are quite diverse, but the wildlife upon which their activities are based all have one thing in common - they are all dependent upon good quality water. Our attention is focused on the waters off Monmouth County, but most of our comments are applicable or extendible to the entire state of New Jersey.

If a report on this hearing is prepared for distribution, we would appreciate receiving a copy.

Sincerely yours,

Ronald J. Price

Ronald J. Price
Secretary

STATEMENT FOR PUBLIC HEARING REGARDING THE IMPACT OF POLLUTION ON COASTAL AND ESTUARINE WATERS

BY

MONMOUTH COUNTY FEDERATION OF SPORTSMEN'S CLUBS

JULY 23, 1968

In recent years there has been a tremendous growth in outdoor recreation. The public is making great demands for more playgrounds, open lands and accessable waters. Commercial vendors are reaping in the rewards of supplying boats, gunning equipment, fishing tackle, trailers, camping supplies, and all sorts of paraphernalia to affluent Americans with leisure time on their hands. Government officials are finding it very difficult to stay abreast of the demands of the people. The numbers of participants and the dollars they spend stagger the imagination. Outdoor recreation is here to stay. It is finally an industry to reckon with. No longer can recreation be pushed aside in favor of better recognized industries as it has been in past instances.

And what a shame this realization is. It took the almighty dollar to show us the way. Intrinsic and esthetic values were not "applicable" when it came time to define user needs. Nevertheless, in the midst of all the clamor, more and more people are beginning to realize that man cannot continue to act toward his surroundings with the abandon of a caveman. Our health and well-being, and those of future generations, are at stake. It is not only necessary that we take preventive action to correct our past mistakes, it is also urgent that we take steps to restore the quality of our environment. Otherwise future recreational demands will not be satisfied. Furthermore, these steps should be accomplished not by merely treating a collection of local symptoms, but rather by treating the total environment.

The major duty of the Federation is to promote the conservation of wildlife and natural habitat and the propagation of game and fish. We therefore, give the propagation of fish our highest priority when considering water quality. The "old timers" tell us of the enormous fish populations that they saw along our coastline and of the terrific fishing in our estuaries. Perhaps these tales have grown during the years, but it is generally accepted that fishing is not as good as it used to be. In fact, the general decline of populations of certain important species is evidenced by commercial landing statistics, and, in Monmouth County area, by catches from three Sandy Hook Marine Laboratory fish trap sites in Sandy Hook Bay. The blueclaw crab, sought by many recreationists, has obviously declined in recent years from a once numerous population. Fortunately, there is one type of fish-life, shellfish, which apparently is maintaining a large population, but waters closed because of pollution prevent us from tapping this vast resource. Clam digging parties that some nostalgic people talk about are a thing of the past. But why should it be? Clams are abundant.

We note from one recent study that several million hard clams, and probably even more soft clams, exist in just one portion of a bar in the Shrewsbury River in closed waters. The commercial clammers tell us that even this population is insignificant compared to the total in the whole Shrewsbury River - Navesink River - Sandy Hook Bay complex.

We realize the propagation of fish, and of all wildlife for that matter, depends on other environmental conditions as well as on the quality of water. Nevertheless, we want to make it quite clear that fish should not be forgotten in any decisions affecting water quality. The availability of fish, wildlife in general, is considerably important to our personal well-being as well as to the economic well-being of Monmouth County. They are in fact a good barometer of our ability to survive in the long term.

New Jersey has tremendously fertile coast and bays, supporting probably some of the best fishing in the country, and derives more economic and social value from its fisheries than any other state. Certainly Monmouth County's 60 square miles of inland waters (primarily estuaries) and 27 miles of coastline play a significant role in this statement. Monmouth has more water area than any other county except for possibly Cape May County. Monmouth County is a prime recreational area, encompassing all water sports from pleasure boating and swimming to fishing and hunting. There is no significant stream, river, pond, lake, piece of coastal marshland, stretch of rolling surf, sector of shallow bay or section of tidal water lying in, traversing, or adjoining this County which does not today have an obvious high recreational value and an obvious utility for the propagation of wildlife.

The county is on the boundry of the metropolitan area and receives considerable recreation pressure. The fishing is quite good and even today many opportunities exist for the fisherman. Assessing available literature, we venture to say that last year the county attracted over 150,000 individual resident and out-of-state salt water anglers whose combined personal expenditures on their sport in the county amounted nearly to ten million dollars. Salt water sport fishing is clearly a healthy industry in Monmouth County considering the county's total assessed industrial valuation in 1967 amounted to only $79,278,440. Observing the growth of salt water sport fishing along the Atlantic seaboard in recent years, we estimate this industry in Monmouth to be potentially worth fifteen million dollars (measured in today's dollars) in ten years, participated by 250,000 anglers. Moreover, this figure does not include the effect of an above average per cent influx of new people (334,000 in 1960 to about 445,000 today; 645,000 in 1980). In addition to salt water fishing, the estuarine watersheds support a considerable amount of fresh water fishing and hunting.* Duck hunting is particularly attractive on our tidal waters. And we should point out a large growth rate is also occurring in hunting and inland fishing activities as well as in salt water fishing.

* As reflected by 5,280 fresh water licenses and 10,378 hunting licenses sold in the county last year.

It is this growth in recreational demands that has this Federation apprehensive. The growth will occur provided the necessary facilities and fish and game will exist. But how can Monmouth County support 100,000 additional salt water anglers for example? The fishing accommodations are already crowded. Part of the answer obviously requires development of fishing facilities and provision of access to these facilities. Another part certainly requires the cleanest waters possible in order to achieve maximum production of fish. We point out fish are not very adaptable, but rather are very specialized on their environment. A change affecting the ecological balance, sometimes even a slight change in habitat, may cause the fish to move on or maybe even perish.

While fish require good quality water and the habitat it provides at all times, other water oriented animals such as muskrats, beaver, otter, mink, ducks, geese, swans, rails and a myriad of amphibians must at least have the quality of water necessary to maintain the habitat upon which they are dependent. Good quality water is necessary to support many insect forms which, when they metamorphose to flying adults, provide food for some of our most pleasurable birds including the martins, swifts and swallows. Polluted waters generally favor insects such as the mosquito and black fly that are known to be exceedingly pestiferous to humans. The fishhawk (which has decreased in alarming numbers in recent years) and the bald eagle (which is now being considered as or is a species endangered with extinction) as well as the herons, the egrets, the kingfisher and others are dependent for their sustenance upon the fish that can be produced only in waters of good quality. Upland animals such as the deer, fox, raccoon, pheasant, quail, grouse, rabbit and others all must at the least have some good quality water within their established territories to survive. Water of good quality, much the same as with land and air, is an integral and necessary part of our total environment, and that of the organisms which man over eons of time has depended upon for food, pleasure, recreation and sport. Because of this it is our firm belief that the regulatory agencies responsible for maintaining water of quality commensurate with the requirements of these organisms and humans must be provided with any "tools" necessary to do their job.

Unfortunately, present government attitudes as relating to wildlife and even pollution laws themselves do not deal with a gradual increase of pollution, neither in time nor along downstream. However, they may deal with pollution after-the-fact; that is pollutants may be allowed into a watercourse and a penalty invoked only after damage to fish or their habitats has been established. It has been our experience that the causative materials in pollutions that have been responsible for the death of organisms in the majority of occurences goes undetected. The dead organisms all too frequently are the only evidence that a pollutant had been present. Also there is evidence that some of the more advanced chemicals of this era are detrimental to at least a portion of our wildlife through subtle effects upon their reproductive potential, by destroying less resistant stages of their life cycles, or by depleting population of organisms upon which the higher forms of wildlife depend.

There is an apparent reluctance by the administration in the State of New Jersey to introduce and act on water pollution control measures which are aimed at the protection of fish and game. Existing powers of the Division of Fish and Game in the Department of Conservation and Economic Development are not adequate to provide the protection from pollution that the organisms they are charged with protecting and managing require. Bills introduced in the legislature to give the Division such powers have not been enacted, and lately they were amended to the point where the value of the resulting laws are questionable. The fact that New Jersey health officials are not motivated to provide good quality waters for wildlife is reflected in the U.S. Department of the Interior's exception of various criteria affecting "aquatic life", "trout propagation", etc. in the standards initially promulgated by New Jersey Department of Health. Another example of the State's apathy is indicated by the establishment in Department of Conservation and Economic Development of an estuary study, the results of which will undoubtedly point out the need for good quality water to support the type of fish and game which are dependent on salt water in the many varied locations. The estuary study is necessary, but apparently most government officials place a low level of importance on the study because its financing is derived from hunting and fresh water fishing license sales, not from general public state funds or revenue commensurate with estuary based activities.

This poor attitude at the state level is most unfortunate for Monmouth County. The water resources of Monmouth County are not yet destroyed by pollution. We do have some of the few remaining waters open to clamming and only a few beaches have been closed. However, a reversal of attitudes must necessarily come about if the current down-hill trend is to be stopped. But even recent history does not indicate that such a change will take place, and the tremendous effort needed to improve conditions in order to accommodate the additional 100,000 anglers mentioned earlier seems to be an impossibility. It is not clear the State will cause a change; nevertheless, we continue to plead.

In closing, we sum-up our position on the issue of the impact of pollution on coastal and estuarine waters:

(1) The coastal and estuarine waters and connected watersheds are and will always be essential to the personal well-being of the residents of Monmouth County and many non-residents in providing recreational outlets, particularly fishing and hunting. Sport fishing alone amounts to a significant industry when considering the economic stability of the county.

(2) The damage due to pollution in Monmouth County is not as great as in other areas, but we paint a pessimistic picture. There is considerable amount of talk professing the values of the estuarine zone, but scarcity of action substantiating these values. We need a significant example which will set a precedent and which will demonstrate that the tide has clearly turned against pollution. Water pollution abatement must be given top priority in the management of our natural resources.

(3) The great growth of outdoor recreation, particularly fishing, can be accommodated by implementing three measures. One is to develop the necessary facilities, such as adequate waterway channels, underwater reefs and improved jetties and bulkheads from which to fish, and to provide adequate access to these facilities. The second measure is to preserve a necessary proportion of the estuarine zone. The third is to reduce water pollution. These measures are interrelated in many aspects, and efforts in all three areas must be coordinated. It is the total environment that must be treated.

(4) Good water quality controls must be established, and they must include measures which provide for the preservation and propagation of fish and game and their habitat. This will require authority to forcefully deal with pollutors on the basis of practices hazardous to fish and other water-oriented life before damage is caused. It will also require the employment of people knowledgable in this field, and we stress these people will possess qualifications different from those directing their attention to the health of humans. We further submit that in our opinion, there is no service performed or product manufactured by industry in our estuarine area of such vital public importance that industry's management and stockholders are not responsible to provide the necessary pollution mitigative equipment and techniques required to maintain a water environment suitable for both humans and wildlife.

(5) This Federation does not believe any particular governmental agency is most capable of managing the development and protection of our estuarine resources. All levels - local, state and federal - are known to be capable of mismanagement of the estuarine resources, but any could do the job if given proper motivation and if sufficient patience and foresight is applied. Naturally, cooperation from all levels and coordination of all efforts are needed. Therefore, considering the complexity and widespread nature of the job, it would seem that the federal government is in the best position to oversee the work.

REFERENCES

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2) Recent news release from American Littoral Society on, "Drop In Fish Resources Linked To Seashore Damage"

3) Unpublished data from Sandy Hook Marine Laboratory on fish trap sites

4) December 29, 1967, Clam Survey, Harold H. Haskin, Oyster Research Laboratory, N.J. Agricultural Experiment Station, Rutgers State University

5) "Estuaries - America's Most Vulnerable Frontiers", Will Johns, published by National Wildlife Federation

6) "A Strategy For a Livable Environment", U.S. Department of Health, Education and Welfare, 1967

7) "Shoreline Recreation Resources of the United States", Outdoor Recreation Resources Review Commission Study Report 4

8) "Sport-Fishing - Today and Tomorrow", Outdoor Recreation Resources Review Commission Study Report 7

9) "The 1960 Salt-Water Angling Survey", U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife

10) "1965 National Survey of Fishing and Hunting", U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife

11) Recent annual reports and unpublished data from Division of Fish and Game, N.J. Department of Conservation and Economic Development

12) Monmouth County Planning Board: Report No. 1, "Land Use and Physical Characteristics", 1967; Report No. 2, "Population and Housing", 1968; compilation of SR3 building inspector reports filed with county Board of Taxation

13) Letter to New Jersey Governor Richard Hughes from Secretary of the Interior, Stuart Udall, March 13, 1968

August 8, 1968
24 Anne Drive
Schenectady, New York

Mr. John S. Farlow
Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality
  Management Center
Edison, New Jersey 08817

Dear Sir:

Enclosed you will find a statement prepared for the record which deals with the "Impact of Pollution on Our Coastal Waters." This statement expresses the concern of the New York Chapter of The Wildlife Society for the welfare of our marine resources.

Sincerely yours,

Herbert E. Doig

Herbert E. Doig
President
New York Chapter

HED:nn
Enclosure

Statement for the Record
on
Impact of Pollution on Our Coastal Waters.

Prepared by
The New York Chapter, The Wildlife Society

The many values of estuaries have been reported in some detail. It is assumed by the New York Chapter of The Wildlife Society that their importance to finfish, shellfish, waterfowl, and other forms of wildlife for recreational, nutritional, and aesthetic reasons need not be further documented. It is also acknowledged that estuaries are important to commerce as channels and ports, valuable for recreational boating and swimming, and have been, and continue to be, convenient disposal areas for agricultural, domestic, and industrial waste effluents. They also provide convenient sources of sand for various public and commercial enterprises such as land fills, concrete mix and beach nourishment.

Since estuaries are utilized in so many ways and since jurisdictional authority is usually vague and disjointed, the overall effect of exploitation has resulted in serious mismanagement and environmental debilitation. Too often exploitation is justified by its short-term economies with long-term consequences being overlooked or purposely ignored.

One aspect of environmental abuse which is of primary concern to wildlife interests is that of physical pollution through solid waste disposal. Most communities along the Atlantic Seaboard are experiencing a shortage of space to dump increasing quantities of discarded goods. Many communities will inevitably go to the marine edge unless forcefully stopped by meaningful authoritative action. This solution to a difficult public welfare problem is especially appealing in that filled areas provide sites for expansion of high value housing and industrial complexes. It is also viewed as a practical means for reducing the mosquito nuisance. This threat to valuable coastal areas inflicts irreparable damage which can never be recovered.

As we become more knowledgeable of the environment and of the factors affecting it, we realize the true significance of chemical pollutants many of which are universally applied to make life more comfortable. These chemicals often take the form of pesticides which are thought essential by public opinion but which destroy most if not all living organisms. More attention must be given to selective use of pesticides, accelerated research for biological pest controls and elimination of the availability of persistant chemicals.

Through cooperative action many of the uses for estuaries can be compatible. Coordinated planning and control at all pertinent levels of government seems to be the basic requirement for estuarine management. Such planning and control which effects fish and wildlife values in the natural environment is gradually being achieved in

New York State through such vehicles as the Long Island Wetlands Act and the Stream Protection Act. Additional effort and concern is needed however, if perpetuation of the estuarine biota is to be assured.

We urge the FWPCA through coordinated study to quickly establish guidelines in this most important area of environmental concern lest most of our conservation efforts be lost and our remaining estuaries irreparably damaged.

Mr. John S. Farlow
Regional Coordinator, National
Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Re: Raritan Bay and River and Arthur Kill

Dear Mr. Farlow:-

We would like to have the following statement entered in the record of the July 23rd hearing on Pollution of tidal waters.

We have both lived in the Raritan Bay area all our lives and have slowly seen the estuaries in this portion of the country degraded to their present deteriorated condition. Both of us not only fished, but swam and boated in the bay and adjacent waters. Of course this is now out of the question because of the pollution.

All efforts over the years by civic organizations, boating clubs, sportsmen groups, etc. have failed to get much action to eliminate or abate pollution. We feel this is mainly because of the lack of inaction on the part of the State of New Jersey Department of Health. We also think that there have always been adequate laws on the books to protect the estuaries, but the laxiety on behalf of the state to enforce the laws is more than obvious.

We would like to see the area utilized for recreation purposes---the area is already classified as such. With the projected growth here in the metropolitan area and the lack of recreational facilities of this type, it appears that the need for clearing the waters so that they may be used for recreation once again is more than justified.

We respectfully suggest that because of the laxiety of the state government that the estuaries come within the realm of the federal government so that these natural resources may be protected ad infinitum.

With the big push toward fewer working hours and eventually days a week, more and more time will be available for relaxation and recreation. The wise thing would be to save these estuaries by restoring them.

Sincerely,
Michael & Virginia Yuhasz
MICHAEL & VIRGINIA YUHASZ
175 Lincoln Street
Morgan, New Jersey 08879

VJY:pp

ACTION

FOR PRESERVATION AND CONSERVATION
OF THE NORTH SHORE OF L. I., INC.
18 WEST CARVER ST., (516) 271-3029
P. O. BOX 492, HUNTINGTON, L. I., N. Y. 11743

Area coverage - The Townships of Oyster Bay, Huntington, Smithtown and Brookhaven

August 9, 1968

Mr. John S. Farlow
Regional Coordinator,
Natiohal Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Mr. Farlow,

ACTION for Preservation and Conservation of the North Shore of Long Island, Inc. wishes to make the following statement in writing for the record:

"ACTION" knows that our rivers, estuaries, harbors, lakes and other bodies of water must be returned to purity or protected against pollution, as the case may be.

We can no longer use our waters as sewers, and fill marshlands and dredge indiscriminately.

There must be legislation to protect these valuable resources. This legislation should back up the citizens and conservationists in their unending struggle against selfish and financial interests seeking to destroy the ecological balance of what remains for any purpose whatsoever!

Yours truly,

Harriet B. Post

(Mrs. Edward Everett Post)
Chairman, Water & Wetlands Committee

HBP:de

Mrs. Ralph Allecca
RR 2
Stone Hill Road
Colts Neck, N.J. 07722

August, 1068

Mr. John S. Farlow
Regional Coordinator, Nat'l Estuarine Pollution Study
North Atlantic Water uality Management Center
Edison, New Jersey 08817

Dear Sir: Please accept the following statement for the records of the Estuarine Study.

I am a native of the Jersey shore whose childhood summers were spent on the shores of the Raritan bay. Learning to swim in the shallow waters, building castles with the freshly washed beach sands, running over the firm bay floor at dead-low tide looking for the tell-tale signs of clams then, happily digging away to fill a bucket with these funny little sea creatures which were extra fare on our dinner table.

Hunting for sea shells and driftwood was a real adventure taking one over long stretches of beach sands that gave way to grassy wet areas just around a point of land. These wetlands were a world of sudden stillness yet, sound and movement were all around. The imprint in the sand just filling with water - the flashing color of a bird amidst the rich green grasses - an occassional glimpse of a furry inhabitant. Sounds distinct yet not distinguishable to the untrained ear. Awe of the unknown kept one hovering at the edge of this world until a more adventuresome age. Fishing was an added pleasure, fresh caught fish was seldom wasted. Summer was a time of minor discomfits, an occassional cold or the cramming of feet into shoes.

My children, too, are natives of the Jersey shore. They learned to swim in a pool. Playing in the bay water led only to ear and throat infections. Skin rash and, sometimes serious skin infection were the result of leisurely hours on the sands. Searching for driftwood and sea shells was a farce, drift debris of all sorts littered the beaches and large amounts of shell deposits covered the waters edge. Rarely was a whole, unmarred shell to be found. The other world of the grassy wetlands was not to be discovered by these young adventurers. The continuity of beach and wetland had been broken, filled, bulkheaded and developed areas blocked their paths. Clamming was a happening of the past. Too much was wrong with the environ - ment, from the not so firm bay floor to the actual filth floating on the tides. Outbreaks of hepititus finally led to a ban on this simple pleasure of summer.

In two short decades- from my reschool days to those of my son and daughters - the purity of summer vacations at the shore had been destroyed. Another generation in our family is seeking summer adventures, their days are spent in a regimented and costly beach club.

Gone, too, is the fascination of an approaching " nor'easterner" The wild wind and tides that challenged the spirit and left treasures from the sea now impart fear and leave heartache at property destroyed. Still the bulkheading and filling and development of the wetlands goes on, their value as natural flood control areas least considered. The protests of concerned citizens generally ignored by government in their pursuit of tax ratables.

Research has substantiated the importance of the coastal and tidal waters and wet - lands to fish and wildlife, however, until recently the public had not been kept informed. Research will be needed to anticipate and to solve the needs and problems of the future, public involvement must be sought from the beginning.

All levels of government can and must become involved in the conservation of the marine resources. The sovereignty of the federal and state governments must be retained and where necessary regained as it relates to these resources. The riparin rights of the people should not be sold out to private interest. Local governments through their planning and zoning ordinances should protect these zones from further encroachment and misuse. In consideration of use top priority should be given to the natural function of the marine environment. Management would seem to be the responsibility of the state government, although larger intercoastal areas would present a problem.

Thank you for your courteous attention.

Sea Grove Avenue
Post Office Box 245
Cape May Point, N. J.

Mr. John S. Farlow,
North Atlantic Water Quality Mgt. Center,
Edison, N. J. 08817

Dear Mr. Farlow;

Though it was impossible for me to attend your public meeting on July 23rd I would like to have the following statement concerning the impact of pollution on the estuarine area in which I live, registered.

The destruction of the resources in the estuarine zone of Cape May county occurrs in two ways, direct and indirect. Man has destroyed forever about 15% of Cape May County's estuarine zone. This destruction took place and is still going on in the form of dredging, filling and bulkheading for lagoon type housing and marina development on the tidal marshes. Side effects of this activity are: Destruction of shellfish beds by silting, elimination of the important buffer flood plain for abnormal tides during severe coastal storms and additional financial burden placed on other taxpayers and insurance policy holders when these "improved " properties are damaged or destroyed.

This direct destruction can be halted only by intervention of the state and/or the federal government; the best attempts to institute land use controls on the local and county level have failed. I therefore feel that since the resources and financial stakes in these estuarine zones are certainly of state and national proportions, the state and/or the federal government should purchase outright the entire tidal marsh area. Only public ownership and protection will halt this destruction which is too often regarded locally as progress.

Indirect destruction and damage to our county and state Atlantic estuarine resources occurrs as pollution. This is in two forms: sewage and chemical insecticide. A third form threatens in the near future, this is thermal pollution from power generating plants. Approximately 85% of the county's shellfish producing tidelands have been condemed by the state health department . This action was necessary because of an almost constant outpouring of improperly processed sewage from plants serving our coastal and mainland communities. The state is taking belated and improper action in this matter by serving notice on the violating communities that their plants must be improved to comply with health standards by 1970 or 1971. Unfortunately the state health department has recomended that the effluent from these improved plants be piped into the ocean. Commissioner Robert Roe of the State Department of Conservation has taken sharp issue with this latter recomendation. I believe that since the potable fresh water resources are becoming scarce and are being polluted by salt water intrusion into underground strata in our area, that, sewage, which is actually fresh water, should be purified so that it can be reused. This renovated water could be used for direct recharge of our potable supply or used to recharge as a buffer to encroaching salt water. These processes are now being used successfully on Long Island and in California.

Pollution by chemical insecticide, ironically, is being accomplished by public agencies. These agencies are our county and state mosquito control organizations. The use of insecticides, minute quantities of which kill basic food chain organizms, is taking place on and surrounding our coastal marshes. The most destructive practice is application of these chemicals by airplane. Only this year has this practice been curtailed, largely due to the efforts of a state fish and game biologist and a medical doctor who have argued strenuously with fellow members of our county mosquito commission. To the best of my knowledge this missuse of insecticides is still continuing in other coastal counties.

I feel that scientists familiar with the total resource and ecology of our coastal wetlands should be consulted at once by officials responsible for mosquito control. I further feel that the public should be informed about this problem so that it can insist on implementation of improved programs.

I am a native of Cape May County, an employee of the county planning board, a member of the local chapter Izaak Walton League, a member of the N. J. Audubon Society and past member of the county park commission. I do not speak in this letter for any of these organizations. I do speak with a good background knowledge of the problems of pollution and destruction of our natural resources.

Very sincerely yours,

David Rutherford

David Rutherford

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL
CHAIRMAN OF THE BOARD

R. W. McFALL
PRESIDENT

548-3349

SYMBOLS
DL = Day Letter
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JOHN S FARLOW FWPCA Edison NJ 08817
NATL EXTUARINE POLLUTION STUDY
NORTH ATLANTIC WATER QUALITY MANAGEMENT CENTER EDISON NJER

PLEASE INCLUDE THIS REQ IN TESTIMONY RECORD OF FWPCA MEETING JULY 23 WHICH I ATTENDED. AS A NEWSPAPER SCIENCE WRITER AND CONSERVATIONIST I ASK FWPCA INVESTIAGATION OF LONG ISLAND SOUND AS A RECEIVED OF THERMAL AND RADIACTIVE WASTES FROM PROPOSED NETWORK OF NUCLEAR POWER PLANTS ON BOTH SHORES SINCE STUDIES BY LAMONT LAB AND OTHERS SHOW SLUGGISH TIDAL EXCHANGE AND SINCE SOUND IS ALREADY SHOWING SIGNS OF EUTROOPHICATION AND POLLUTION AS FAR EAST AS NEW LONDON CAN FWPCA CALL A MORATORIUM ON PLANT CONSTRUCTION UNTIL THIS UNCOORDINATED PROGRAM IS REEVALUATED

MRS ANN CARL SUFFOLK SUN DEER PARK LI NY

SF1201(R2-65)

August 12, 1968
42 James Street
Shrewsbury, N.J.

Mr. John S. Farlow
Regional Coordinator
National Estuarine Pollution Study

Dear Mr. Farlow,

Enclosed you will find a statement of the views of the Red Bank Area League of Women Voters. We hope it will be of some use.

Sincerely,

Kay B. Jensen

Mrs. Carl J. Jensen Jr., Pres.
Red Bank Area
League of Women Voters

Nancy M. Gahn

Mrs. Donald C. Gehn
Water Chairman

STATEMENT TO THE NATIONAL ESTUARINE POLLUTION STUDY BY THE RED BANK AREA LEAGUE OF WOMEN VOTERS

The Navesink and Shrewsbury Estuaries are areas of great beauty. By supplying a constant source of varied enjoyment, they have made this part of Monmouth County a good place to live and work. Shellfish and commercial fish have long supported local industry. Although presently severely damaged by pollution, they are by no means useless. Tourists provide a continually growing trade in the summer while boating and sport fishing are a year round base for the area's economy.

The future of our estuaries may well determine the future of our area. If we permit them to be used without an overall plan, the past history of northern New Jersey will no doubt be repeated and we will finally despoil this area and move southward to continue the process. We must insist that resources belong to all citizens; that no one citizen or group should be allowed to change an estuarine area; that no one be allowed to use water resources, without conforming to a plan designed to save and preserve the great beauty and many varied uses of these estuaries.

There are some tidal marshes here, still unharmed, that can and do provide breeding grounds for fish, shellfish and waterfowl. These must be preserved in their natural state and protected from pollution in order to provide the fish and game that make estuaries so appealing to man. Some of these areas are: Conaskonk Point, Horseshoe and Spermacetti Coves in Sandy Hook, the sedge islands in the Navesink, and some tidal marshes in the Shrewsbury.

Dredging, bulkheading and landfill are presently supervised only by the Army Corp of Engineers. These activities have already removed more than half of our marshlands from productivity. They are a source of permanent damage to estuarine areas and their ecology. Therefore dredging, bulkheading and landfill should have broader supervision. The decision of which value is the highest for any tidal area should be based on a consideration of its effect on adjacent areas and its impact on the overall plan for the entire area.

There are beaches vastly under used because pollution of the water makes them dangerous. Poor land use and deteriorated local conditions resulting from it have wasted the potential of much of the shore area. A combination of poor utilization by local governments, and private control of ocean beaches effectively closes much of the Atlantic coast to the public. Since the water quality on ocean, bay and estuary beaches is dependent upon uses to which these beaches and adjacent areas are put, it is vitally important that we continue working for their improvement. As pollution and poor land use are eliminated, beaches inland and on the ocean will become safer and therefore more valuable. Since the ocean beaches are protected by federally built sea walls, the possibility of their becoming public property to be used for the good of all citizens might be considered.

We hope to see a broad national plan encouraging state and county planners in setting up firm guide rules with future generations in mind. Any land owner or group should have to prove that any change they intend to make at a local level is consistant with the overall plan.

The remaining marshlands are threatened right now. We urge strongly that all levels of government act immediately to halt any changes that might be detrimental. We thank you for undertaking this study and hope it will result in a comprehensive plan for the future.

New Jersey State Federation of Sportsmen's Clubs

ORGANIZED MAY 24, 1935

State Affiliate of National Wildlife Federation

SUBSIDIARIES
New Jersey Wildlife Council
Junior Sportsmen of America

26 Franklin Ave.,
Beverly, N. J. 08010
August 8, 1968

Mr. L. M. Klashman, Regional Director
Northeast Region, F.W.P,C.A.
John F. Kennedy Federal Bldg.,
Boston, Massachusetts 02203

Dear Mr. Klashman:

The supplemental statement for the record of the public hearing held at Rockefeller Univ., N. Y. C. on July 23 is enclosed. I request that the record of this hearing note the co-author of this statement to be Harold Gray. Without his help, this supplemental statement would not be possible. Mr. Gray, whose mailing address is R.D. #2, Box 213, Pleasantville, N. J. 08032, has been active in water pollution control in Atlantic County for over ten years. A nonprofessional, a hunter and fisherman, he is regarded by local sportsmen as an authority on water pollution in Atlantic County. I request that Harold Gray receive a transcript of the hearing too.

Both of us will be very happy to answer any questions you may have. We are not professionals, and our technical knowledge is limited. We are both dedicated to the goal of clean waters in N. J. for many years. If we can be of any further assistance, please contact either Harold or myself.

Sincerely yours,

William Meyer

William Meyer, Chairman
Water Pollution Control
Committee

cc: Robert Shaw,
N. J. Dept. of
Health

New Jersey State Federation of Sportsmen's Clubs

ORGANIZED MAY 24, 1935

State Affiliate of National Wildlife Federation

SUBSIDIARIES:
New Jersey Wildlife Council
Junior Sportsmen of America

SUPPLEMENTAL STATEMENT FOR PUBLIC HEARING ON N.J. COASTAL AREA HELD BY F.W.P.C.A. ON JULY 23, 1968

This statement was prepared by Harold Gray and William Meyer representing the N. J. State Federation of Sportsmen's Clubs and is an addition to the statement turned in by Wm. Meyer on July 23. The supplemental statement does not alter the original statement in any way, but provides additional information.

POLLUTION DAMAGE

Serious pollution damage has occurred and continues in Atlantic County. Several pollution sources are noted, but these by no means cover the gamut of pollution in this area.

Motels in West Atlantic City (Egg Harbor Township) are dumping raw sewage into Lakes Bay. For over 10 years, the State Dept. of Health has known of this, but the condition has not been corrected. Now, we are told these motels will be connected soon to a sewage treatment plant. How soon? Is another five years soon enough?

Raw sewage from the 9th Street bridge at Ocean City is dumped directly into the waterway. This condition exists at a number of highway dept. operated bridges which have a bridge tender and toilet facilities on the bridge.

A requirement for all N. J. pleasure boats equipped with toilets to have a chlorinator or holding tanks installed has been introduced. Many out-of-state registered boats are accommodated as transients by our marinas. In many cases, these transients live aboardship and dump raw sewage into the waterway. These out-of-state boats must also be equipped with chlorinators or holding tanks if we are to succeed in clearing up our waters.

The Atlantic City Electric Company at Egg Harbor River and Beasley's Point uses chemicals to clean out their condensers, then discharges these chemicals into the river. The visible effect of this has been many fish jumping in a frenzy at the location of the discharge, after which the fish flee from the area as quickly as possible. Chemical discharges must be stopped.

Billboard advertising companies in the county use herbicides to keep vegetation from obscuring the signs. Some of these billboards are located on or near tidal marshes or waterways. Since these herbicides are detrimental to fish and aquatic life, this practice must be stopped.

Pesticide pollution is severe along the Atlantic County coast as well as in other coastal areas of N. J. Mosquito control, farm use, and spraying for budworm, gypsy moth, and other pests by the Forestry Dept. have all contributed to this pollution. Every year crabbing is a little less bountiful than the previous year. We attribute this to two reasons: (1) water pollution and (2) removal of the size limit on crabs. Fantastically small amounts of some pesticides will kill crabs and shrimp. One part of DDT in a billion parts of water will kill blue crabs in 8 days![1] (One part per billion is an equivalent ratio to 1 ounce of chocolate syrup in 1,000 tank cars of milk.) Intensive research must be done to find biological controls for the mosquito and various other pests. These biological controls must replace pesticides wherever possible. Pesticides must be used sparingly only when absolutely necessary and use of the least persistent types must be stressed.

Many governmental agencies think only in terms of cold, hard cash. Our original statement noted the dollar value of the recreational industry in N. J. Our economy loses money when beaches are closed because of pollution. Has commercial fishing also suffered? Preliminary data by the U. S. Bureau of Commercial Fisheries indicate that U. S. fishermen landed about 4.1 billion lbs. in 1967, the lowest domestic catch in 25 years. Menhaden and salmon accounted for the largest decline. Other species showing declines included haddock, blue crabs, whiting, Atlantic flounders, Atlantic Ocean Perch, and sea scallops.[2] Since the estuarine areas are spawning grounds for fluke, perch, menhaden, herring, and other fish, we can only conclude that pollution is a serious factor in these declines.

For the decade ending in 1967, U. S. imports of fillets and blocks made from groundfish almost doubled, going from 161,396,000 lbs. to 316,860,000. Spokesmen for major segments of the domestic groundfish industry report serious economic declines during this period. In 1967, imports supplied a major share of the domestic consumption of these products.[2]

In many cases, dredging operations by, or under permit with, the U. S. Army Corps of Engineers compound the evils of water pollution. Dredged materials from the Inland Waterway and other areas are deposited on the tidal marshes or along the shore. This material smothering the natural bottom destroys the ecological balance of the estuary bottom and may bury valuable clam beds. Filling of inlets by siltation and dredged material and the depositing of such material behind bulkheads at Margate, Ventnor, etc. add valuable new tax ratables, but the narrowing of the waterways destroys the flushing action of the ocean to dilute and disperse pollutants in the bays and estuaries.

RECOMMENDATIONS & CONCLUSIONS:

Our study of water pollution has uncovered many areas for improvement. We strongly recommend that no home, or commercial construction be permitted to start in coastal areas or near waterways unless it can be guaranteed and is implicit in the contract or permit that from the very inception of building use, all sewage will be piped to an approved sewage treatment plant providing secondary treatment as a minimum. At present, cesspool seepage into our waterways is a serious pollution source.

Supplement - N. J. S. F. S. C.

RECOMMENDATIONS AND CONCLUSIONS: (CONTINUED)

Pleasure boating and sport fishing are major outdoor recreations in N. J.. A significant number of these boats are powered by outboard motors equipped with underwater exhausts. The large numbers of outboard motors exhaust varying amounts of carbon monoxide, carbon dioxide, and other gases below the water surface. We believe a study should be made on the effects of this gaseous contamination of our waterways.

We have noted with dismay that many citizens are not aware of public hearings being held on their local areas or areas of interest to them. Therefore, we recommend that public notice be printed in all local newspapers in the area subject to hearing at least one month prior to the hearing (to permit time to prepare a statement) and again within one week of the date of the hearing. In addition, agencies and organizations known to be interested should be notified by mail one month prior to hearing.

In conclusion, dirty, polluted water is much more expensive than clean water in terms of both tangible and intangible values lost. In spite of our efforts to date, we are not yet holding our own in water pollution control. The longer we stall, the higher the costs will be. The time for speeches is over. It's time for ACTION! CLEAN WATER is our GOAL; let's get on with it!

REFERENCES

1. Page 8, "Fish, Wildlife and Pesticides," U. S. Fish & Wildlife Service, 1966.
2. "Fisheries of Canada", June 1968. Dept. of Fisheries, Ottawa, Canada

STATE UNIVERSITY OF NEW YORK AT ALBANY
ALBANY, NEW YORK 12203

DEPARTMENT OF
EARTH AND ATMOSPHERIC SCIENCES

August 14, 1968

Mr. John S. Farlow
Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality
Management Center
Edison, New Jersey 08817

Gentlemen:

In regard to your request for statements on the impact of pollution on coastal waters, I would like to bring a positive approach before your offices. In the past, we have continually complained about various forms of pollution, it is about time we learned to use those forms which we have not been able to alleviate.

For example, within the next fifty years nuclear power plants will be established on many areas of our coast lines. Thermal discharge is discussed as a form of pollution from nuclear plants.

In Scotland, an experimental fish farm uses thermal discharge to lengthen the growing season of Dover sole. This is one case of positive thinking. Other attempts along these lines must be extended.

Garbage has been used to feed hogs, and effluents to feed fish. If our estuaries are to survive the impact of various forms of pollution, then we must learn to use more forms of pollution in positive ways, and if possible, use them near their source. Eliminating pollution will always be a goal worth trying for, but experience has shown that this is a most difficult goal. The ecological effects of pollution which have been enumerated in the past have been detrimental. If the same effort were put into finding advantageous ecological effects, we would have our first guideposts for new uses of pollutants.

Sincerely,

Ronald Stewart

Ronald Stewart
Research Associate
Atmospheric Sciences Research Center

RS:mlj

Con Edison
Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N Y 10003

August 15, 1968

Mr. John S. Farlow
Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality
Management Center
Edison, New Jersey 08817

Dear Mr. Farlow:

Enclosed for registration is an expansion of the oral statement presented by W. Donham Crawford, administrative vice president of the Consolidated Edison Company of New York, Inc. at the meeting sponsored by the Federal Water Pollution Control Administration on July 23, 1968.

Thank you again for giving us the opportunity to participate in the meeting. The preservation of our natural resources has always been and will continue to be a matter of vital concern to Con Edison. Thank you also for granting us an extension so that we could properly prepare the statement.

If we can be of any further assistance, please let us know.

Sincerely

Edward W. Livingston
Special Representative
Public Information

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Statement of W. Donham Crawford
Administrative Vice President
Consolidated Edison Company of New York, Inc.

for the record
in connection with a

Public Meeting
co-sponsored by the
Federal Water Pollution Control Administration
The State of New Jersey
The State of New York
The Interstate Sanitation Commission

at

Caspary Auditorium
Rockefeller University
New York City, New York
July 23, 1968

Coastal waters and estuaries represent a priceless asset in terms of the public benefits derived from them. These benefits include the aesthetic, recreational and economic uses of the waters and their shores. As a public utility serving New York City and Westchester County, Consolidated Edison uses the tidal waters of the East River, Harlem River, Hudson River and Arthur Kill for cooling water in its twelve generating stations which supply over eight million people with electricity. This service is vital to the economic life of the community and to the personal well-being of each individual in it.

All of the electricity generated by Consolidated Edison is produced by converting to electric power the heat created by burning coal, oil and natural gas and by the fission of uranium. The nature of these conversion processes is such that a substantial portion of the heat energy involved cannot be utilized, but must be released to either the water or air environment. Disposal of heat to the air is less desirable than to the waters because atmospheric releases could subject local areas to fog and mist and because air cooling apparatus has an objectionable appearance and calls for excessive land requirements. Air cooling is also costlier and less efficient, thus increasing the cost of generating electricity. A mechanical draft, evaporative type cooling complex for 100% cooling of the circulating condenser water for a 1000 megawatt nuclear electric generating unit requires an area of about 35 acres at an elevation close to the surface level and adjacent to the supplying body of water. The initial cost of installation has been estimated at $15,000,000. The total cost over the plant life time would be about $26,000,000.

For these reasons Consolidated Edison plants discharge heat to the tidal waters of its service territory rather than to the atmosphere. As a company vitally interested in the community we serve and in the preservation of that community's natural resources, we do not, of course, rule out the possibility of such cooling installations where they might be deemed necessary. However, for the reasons stated, we look to other methods of discharging heat which do not create environmental, operational and economical problems such as we have described.

The large quantities of condenser cooling water required for the operation of our generating stations are withdrawn and returned to local waters without change except that the temperature has been moderately raised. Although large in terms of pumping requirements, the quantities used for this purpose are quite small compared to the great volumes of water available. After the water has been returned to its source, the higher temperature falls off rapidly due to mixing with the larger volume and loss to the atmosphere from the surface.

It is undeniable that indiscriminate thermal discharges could potentially harm our environment. It is equally undeniable that thermal discharge criteria which are more restrictive than the well being of the prevailing ecology dictates, might impose costly and unsightly alternatives which are undesirable from the public viewpoint. We believe that both these extremes can be avoided by detailed planning which recognizes that each plant and each waterway must be carefully studied and evaluated. We believe that cooling needs can best be met from the standpoint of the overall interest by carefully controlled thermal discharges to the large natural bodies of water available in our area of operations.

In this connection, Con Edison has initiated or is sponsoring the following studies relative to the thermal effect of present and proposed nuclear plants on the Hudson River ecology.

1. In 1964, the Alden Research Laboratories of Worcester Polytechnic Institute built a model of a portion of the Hudson River adjacent to and including the Indian Point plant intake and discharge channels at their Holden, Massachusetts laboratory and have conducted studies on the effect of the thermal discharges from the present nuclear Unit 1 on the temperature distribution in the river. This model was built to a scale of 1:60 horizontally and reproduced an area of the river which extended 1800 feet upstream and 3,500 feet downstream from the plant intakes and about 2,000 feet offshore. In order to study the effect of thermal discharges from nuclear Unit 2 and 3 which are now under construction, the first model has been rebuilt to a scale of 1:60 vertically and 1:240 horizontally and the new model now reproduces an area which extends 1.8 miles upstream to Roa Hook and 2.3 miles downstream to Verplanck Point and covers the full width of the river, 4,200 feet. This

model is equipped with automatic controls for modelling the tidal action with respect to both stage and current. Tests are now being conducted on this model.

In order to study the combined effect of the three nuclear units at Indian Point, the Orange and Rockland Utilities, Inc. conventional Lovett plant on the opposite shore and possible future nuclear units in the general area of Indian Point, another large tidal model which will reproduce an area of the river extending about four miles upstream from Indian Point to Bear Mountain Bridge and downstream about 8 miles to Croton Point is presently being constructed. The scale ratios for this model are 1:80 vertically and 1:400 horizontally.

On the tests now underway, the model reproduces actual tidal, temperature and flow conditions in the river and the actual volumes and temperatures of the condenser cooling water being discharged from the generating units into the river. Temperature distribution in the model river is determined by means of thermistors and thermocouples. Several 24 channel recorders are used and temperature data is recorded on magnetic tape to be processed by computer.

Correlation of the model and prototype was accomplished by adjusting the tidal, current and temperature parameters to agree with the actual conditions observed at Indian Point with Unit 1 in operation.

Northeastern Biologists, Inc., of Rhinebeck, N. Y. conducted a survey of river temperatures in the vicinity of the Indian Point Unit 1 discharge channel outfall in July, 1966 and April, 1967 while the plant was operating at close to maximum capacity.

Similar surveys will be conducted after future units have been placed into operation to assure that regulatory discharge criteria are met.

3. Quirk, Lawler and Matusky Engineers, Environmental Science and Engineering Consultants, have made a mathematical projection to determine the effect of the simultaneous operation of Indian Point Units 1, 2 and 3 on the temperature distribution in the river. This projection was based on actual river temperatures obtained by Northeastern Biologists, Inc. during the operation of Indian Point Unit 1, and on model data from Alden Research Laboratories. The temperature distribution as determined by this study is being used as a basis of comparison with the temperature limitations established by proposed thermal discharge criteria.

The mathematical model employed in this study begins with a one-dimensional, time variable description of the distribution of temperatures along the longitudinal areas of the river. This model has been used successfully by Quirk, Lawler and Matusky to describe the distribution of salt, BOD and dissolved oxygen in the lower reaches of the Hudson estuary. In this study, the one-dimensional temperature distribution, i.e.; the cross-sectional area-averaged temperature, is blended with the mode of decay of temperature across the river's cross-section, as obtained from the Northeastern Biologists, Inc. data. This approach permitted a determination of the extent of the mixing and passing-zones in accordance with guide line federal criteria.

4. Dr. Alfred Perlmutter, Professor of Biology at New York University conducted a survey of the river fishery in the vicinity of the Indian Point Unit 1 discharge channel outfall in 1966 while the plant was operating at close to maximum capacity. His conclusion, resulting from this survey, was that the rise in temperature due to the operation of the plant had no adverse effect upon the Hudson River fishery. A similar survey will be conducted by Professor Perlmutter after Unit 2 and also Unit 3 are placed into operation.

4. The New York University Institute of Environmental Science has been making independent ecological surveys in the Hudson River in the vicinity of Indian Point each summer for the past several years under State, Federal and other grants. Con Edison will now take part in supporting this work and the Institute will continue to make these surveys each year until Unit 2 and Unit 3 have been placed into operation, and for several years thereafter. As a result, there will be an accumulation of "before and after" data on which authoritative conclusions regarding the effect of the entire Indian Point operation on the ecology of the river can be reached. The Institute of Environmental Science will also conduct laboratory studies to provide much needed data on the temperatures to which Hudson River fish species can be exposed without ill effects.

A program of sampling water, sediments, plankton, fish, rooted algae, and shore invertebrates has been followed for several years by this laboratory. An inventory of unicellular organisms, larger invertebrates and fish species for several sites on the river has been compiled. A quantitative survey of shore fishes (mostly 1 + year fish) has been made since 1964, and a quantitative analysis of the midstream plankton from several sites is nearing completion. It is now planned to amplify these field observations with laboratory studies using selected species natural to the environment at Indian Point.

The field samples are analysed for radionuclides (natural and fission products as well as activation products), organic pesticides, trace metals and important anions. Routine measurements of salinity, conductivity and temperature at the collection sites have been made.

The planned laboratory and field experiments would include the laboratory culturing of selected common species of Protozoa, algae, copepods and fish from the Indian Point region, and testing the population dynamics or physiological responses of these species in different conditions of temperature, light, nutrient materials, alone or in combination. The inter-relationship of competing species in these conditions will also be studied.

Field experiments to test the efficiency of millepore sampling of plankton, and the use of monitoring devices in selected sites in the river are also planned.

6. Texas Instruments, Incorporated has been retained by the Company to conduct an aerial infrared thermal survey of the Indian Point area of the Hudson River from Bear Mountain Bridge to Croton. Flights have already been made to cover a period when the plant

was operating at full load and discharging the maximum volume of cooling water into the river. Thermal maps of the river surface will be provided which will indicate the extent up and down the river to which the thermal discharge from Indian Point Unit 1 affects the distribution of temperatures in the river. Similar maps will be prepared after Unit 2 and Unit 3 have been completed and placed into operation.

7. The Hudson River Fishery Study, in connection with the Cornwall Pumped Storage Project, has been underway since 1965. This study is being financed by Con Edison and is being carried out under the general direction of the U. S. Department of the Interior Fish and Wildlife Service and the New York and New Jersey Conservation Departments, and under the direct supervision of a Technical Director from the Fish and Wildlife Service. The study covers an 83 mile stretch of the Hudson River from Croton to Coxsackie and encompasses the Indian Point area.

Sound data is being obtained on the abundance and distribution of eggs, larvae and the young of the year of species having major sport and commercial significance. The data will show the population, laterally and in river depth in relation to tidal stages, time of the day, salinity, water and air temperatures, dissolved oxygen, mile station and other applicable factors. This study will provide valuable background data on the density and distribution of the river fishery in the Indian Point area.

A new study is now being considered which would be similar to the Hudson River Fishery study but modified to place particular emphasis on the fishery conditions in the Indian Point area of the river. This study would provide a continuity of data until and after Indian Point Units 2 and 3 are placed into operation. The new study would include a study dealing with the planktonic and benthic communities in the Indian Point area. Also under consideration is a similar study for Long Island Sound in connection with a possible nuclear plant at Davids Island off New Rochelle.

The Company also maintains careful surveillance to assure that chemical and radioactive discharges to the water serving our plants are virtually nil. The State of New York's Department of Health also carries out such surveillance and has confirmed that operation of our present nuclear plant has caused no change in the environmental radiation levels in the vicinity of our Indian Point Station.

In conclusion, we believe that the recreational, aesthetic and ecological values of local waters should and can be protected while also preserving the vital economic uses of these waters. We have made significant efforts to assure this and we expect to continue and even to expand our efforts toward this end.

# # # # #

PRESENTATION FOR PUBLIC HEARING ON THE IMPACT OF POLLUTION ON OUR COASTAL WATERS
FOR NEW JERSEY AND NEW YORK
JULY 23rd, 1968, Caspary Auditorium, Rockefeller University, New York City, N.Y.
By Nelson, Slager

I am Nelson Slager, Secretary of Fire Island Fisheries, Inc., Bay Shore, New York. We have sustained harmful results once again in our production by another recurrence of eutrophication in the waters of Great South Bay with another significant bloom of Nannochloris.

Beginning in the fall of 1966 and continuing throughout the winter and early spring of 1967 the crews of our clam dredges and other clamdiggers told us the clams were not growing normally. Our production and cost records after that proved the observations to be true.

It was not until Summer 1967 that clams showed the recovery from their bad diet, and it was fall before they had grown sufficiently to meet the market demand. Attached is a table showing the ex-vessel price of Little Neck clams during 1966-67 and 1968, which gives some indication of the effects of supply variations on the market.

The above data in reinforced by a more sensitive indicator--the oyster. Our oyster hatchery in West Sayville has been in production since the summer of 1964. We have just completed our annual transplanting and have had to write off 1964 and 1965 crops due to mortalities during 1966. A major cause of our loss is the super abundance of Nannochloris. The 1966 seed was under controlled conditions long enough to survive the initial stress and the 1967 conditions were more favorable, so we now look forward to an eventual harvest from our hatchery efforts. Attached are the results of the current transplantings.

In addition to the seed oyster picture, the mature oyster condition has suffered to such an extent that their marketability in the fall and winter of 1966 was greatly reduced.

The oyster industry here has not returned to the substantial proportions that a crushing blow would be noticed by many, but it certainly is discouraging to me to make a substantial investment in an effort to reestablish an industry using the latest techniques offered by painstaking research, and then lose its first fruits. We wish the duck industry would invest proportionately in its own future by applying the latest research in sanitation and pollution control. For 25 years we have had to suffer the consequences of the dallying of the duck farmers.

We are confident some duck farmers are going to survive the costs of cleaning up their own industry, and those who do it quickest will do it cheapest. It has been our experience that the sooner a capital project is started and completed the lower the cost. To plead that a competitor who does not control his effluent now will have an advantage, holds no weight, since all will have to face the problem, and the later he faces up to it, the more it will cost him.

We are dependent upon the engineers of the State of New York and the federal government to improve the circulation of water at Moriches Inlet. We are grateful for motivation by the Federal Water Pollution Control Administration for the improvement of the waste treatment plant at Patchogue to meet the sewerage disposal needs of that community and thereby, improving the water quality of Patchogue Bay.

DREDGING SLUDGE. Dredging the sludge from the creeks is of great concern to us. Probably some unwise removal of sludge in 1966 released nutriments which helped trigger an outbreak of Nannochloris. For this reason we are primarily interested in a cautious and safe approach to this problem. Furthermore, we understand that any removal of sludge is contingent upon special State appropriations which have not yet been appropriated.

We further understand that these plants are very effective, after the waste has been held in the lagoons for a period of 5 days for the removal of suspended solids, for improvement of the b.o.d. condition, and destruction of bacteria, via chlorination. However, this process will not remove sufficient phosphates. We are told that a delay is being requested for removal of phosphates. We strongly oppose such a delay. We believe the use of lime would be effective in providing a solution to this problem, until a more satisfactory method is developed.

Now that the duck farmers have promise of such a large measure of success in controlling their pollution, the Long Island Duck Farmers' Cooperative should be encouraged to assume responsibility for self-policing of their industry. It will mean conscientious effort by responsible personnel to assure full effectiveness of the treatment plants. With periodic check-up by the County Health Department, a situation will develop to ensure proper operation and good-will between everyone affected.

If there is any doubt that this is not possible, let there be continuous, mandatory inspection.

The members of the Oyster Institute are deeply grateful to the Federal Water Pollution Control Administration who by their close attention to this problem have given the necessary impetus to those who must provide the solutions. Its quick implementation will mean so much to allthe shellfish interests in this area; they are considerable. In 1967 -- 3,106 clam diggers' licenses were issued in the State of New York. Of this number 60%, or about 1,850 families were entirely dependent upon shellfishing for their livelihood. Another 15%, or 450 clam diggers are especially deserving of your consideration,namely those high school and college students who dig clams during vacation time to finance their educations. Over the years I have personally known a great many of them who are now teachers, lawyers, engineers, and scientists. One of my pleasures as a shellfish dealer has been to watch these young men develop into our richest resource -- the citizen realizing his greatest potential. Please continue to do all you can to restore the environment so the sea resource can be beneficial to all citizens.

One final word is one of appreciation for those public servants who are engaged in the pollution abatement program. The firmness of those committed is so necessary to back up their efforts -- to hold the line for them -- not to give ground for delays -- so they can achieve success and encouragement. We must not lose the fight because of frustration.

Ex-Vessel Price of Little Neck Clams

Table One

Jan 1, 1966	$11.
Feb. 1, 1966	$13.
Mar. 8, 1966	$12.
Mar. 18, 1966	$11.
May 9, 1966	$12.
July 7, 1966	$13.
Oct. 17, 1966	$12.
Dec. 6, 1966	$13.
Jan 1, 1967	$14.
Jan 20, 1967	$13.
Feb. 20, 1967	$14.
Apr. 18, 1967	$13.
June 1, 1967	$14.
June 12, 1967	$13.
June 28, 1967	$14.
July 19, 1967	$13.
Sept. 11, 1967	$14.
Oct. 4, 1967	$13.
Oct. 13, 1967	$12.
Dec 1, 1967	$13.
Dec. 1, 1967	$12.
Jan 1, 1968	$13.
Jan 4, 1968	$14.
Jan 15, 1968	$18.
Jan 22, 1968	$16.
Feb 2, 1968	$15.
Feb 23, 1968	$18.
Mar 8, 1968	$16.
Mar 16, 1968	$15.
Mar 20, 1968	$14.
Mar 25, 1968	$13.
Apr 2, 1968	$12.

TABLE TWO

1964	2,000 Bu. Seed	90% Mortality
1965	2,100 Bu. Seed	90% Mortality
1966	1,400 Bu. Seed	29% Mortality
1967	2,500 Bu. Seed	20% Mortality

Southampton Town Baymen's Association, Inc.
Hampton Bays, New York

July 21, 1968

John S. Farlow
Regional Coordinator, National
Estuarine Pollution Study
North Atlantic Water Quality Management
Center
Edison, New Jersey 08817

Dear Mr. Farlow:

Although we may be unable to attend the meeting on July 23, 1968, we would like to include our statement in the record. Enclosed with our statement are a set of maps prepared by the New York State Conservation Department showing the certified and uncertified shellfishing areas in our township. We would like these included as part of our statement.

Sincerely,

Edwin S. Furman

Edwin S. Furman,
President

Southampton Town Baymen's Association, Inc.
Hampton Bays, New York

US Dept of the Interior
Federal Water Pollution Control
Administration
Northeast Region
John F. Kennedy Federal Bldg.
Boston, Massachusetts 02203

Our first and greatest concern is the capability of our estuarine environment to produce shellfish fit for human consumption at its maximum level. This capability has been greatly reduced by the polluted areas being closed to shellfishing. As you can readily see by the enclosed maps, the uncertified areas almost equal the areas certified for shellfishing by the New York State Conservation Dept. Also, much of the uncertified areas are the most productive shellfishing grounds in the locality.

I estimate that 95% of our pollution problem is caused by the commercial duck farms located on the banks of the creeks and streams which drain into the bays. The effluents allowed to run off from these farms has several pollutional effects. First the bacterial contamination of shellfish growing waters, the excessive growth of seaweeds and algea caused by the nitrates and phosphates in the effluent and the filling in of the creeks and streams by the sludge. This drainage over the past years has actually filled in some of these creeks and streams with sludge banks 6 or 7 feet deep. Even when dredged out the sludge cannot be deposited anywhere near the bay itself because the run-off would cause even greater pollution than we now have. Which leaves only the alternative of pumping the sludge into the ocean.

While some people advocate dredging wider and deeper inlets for a greater flushing action, we have reservations about this viewpoint due to the fact that it may be deterimental to the productivity of the bays. We find very few shellfish near large inlets.

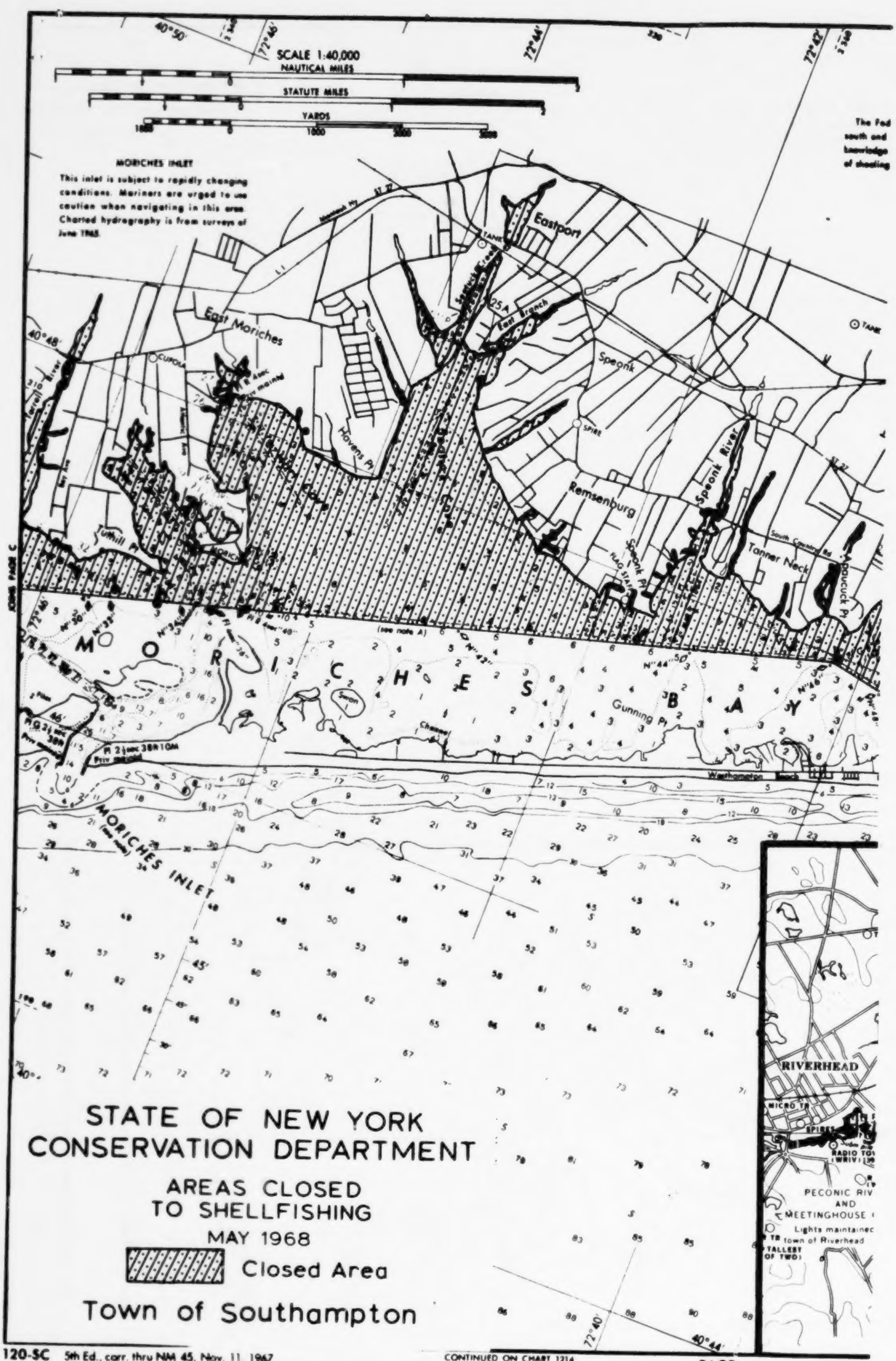
Although it is hard to pinpoint the exact values of this resource there can be no doubt that in its commercial and recreational aspects its value exceeds that of the duck farms causing the pollution. As an illustration we have approximately 275 licensed baymen who derive income from our bays. There are hundreds more who use these waters for recreational shellfishing. This is in comparison to about 30 or 40 polluters. The best use of this resource would be in restraining the pollution so that it would not inhibit

Southampton Town Baymen's Association, Inc.
Hampton Bays, New York

its use by an even greater number of people in the future.

The past has proven that local government is not able to cope with problems that affect the environment itself such as pollution and dredging. In these respects it would appear in the best interests of all to have guidelines set up by the federal government, and followed by the state and local authorities. The management of the fish and shellfish should be left to the state and local authorities.

We appreciate this opportunity to express our views on the subject that is not only important to us as commercial shellfishermen but to the many other people living in our area also.



MORICHES INLET

This inlet is subject to rapidly changing conditions. Mariners are urged to use caution when navigating in this area. Charted hydrography is from surveys of June 1965.

STATE OF NEW YORK
CONSERVATION DEPARTMENT

AREAS CLOSED
TO SHELLFISHING

MAY 1968

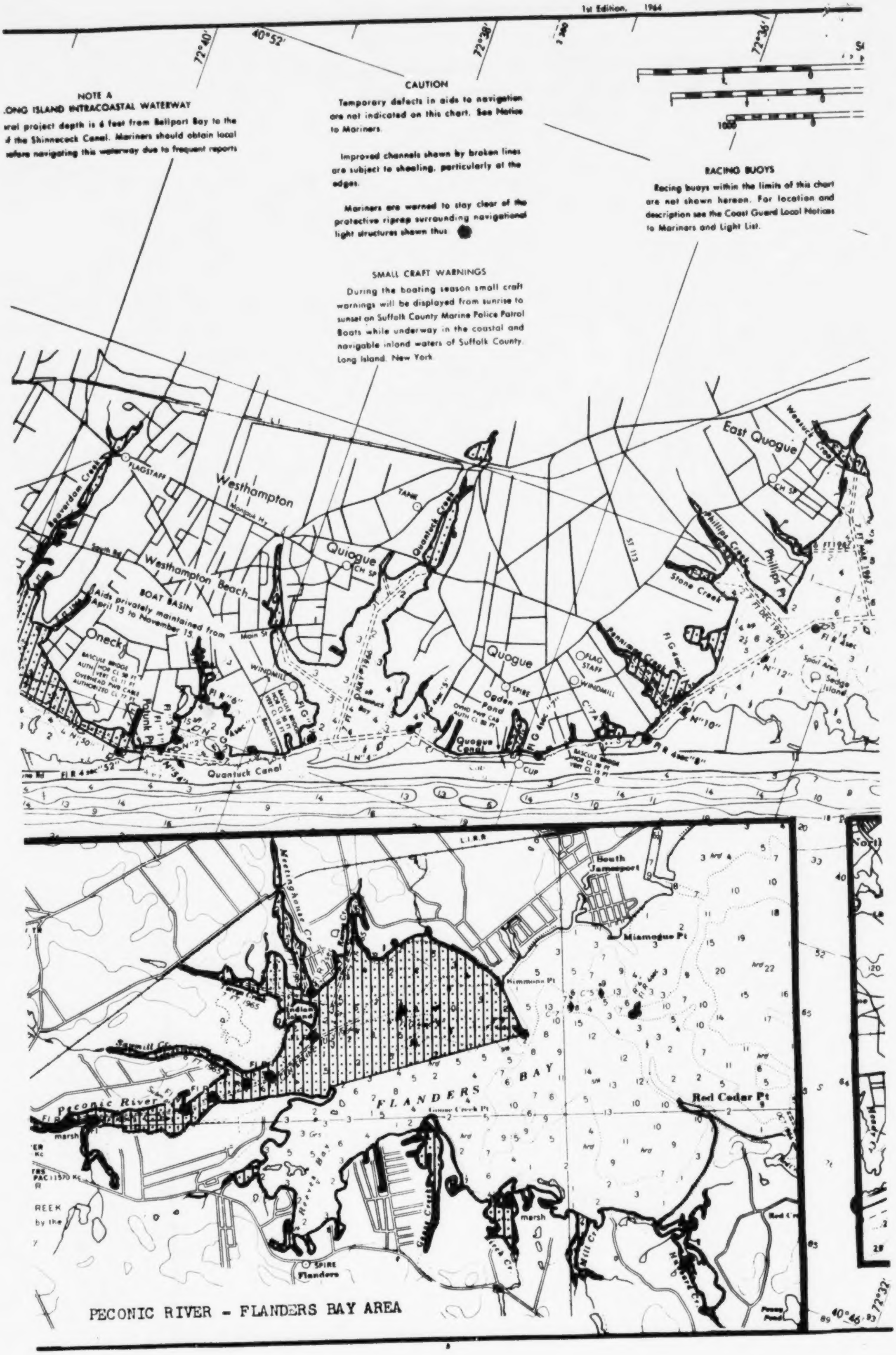
▨ Closed Area

Town of Southampton

120-SC 5th Ed., corr. thru NM 45, Nov. 11, 1967

CONTINUED ON CHART 1214

1st Edition, 1964



NOTE A
LONG ISLAND INTRACOASTAL WATERWAY

ral project depth is 6 feet from Bellport Bay to the d the Shinnecock Canal. Mariners should obtain local before navigating this waterway due to frequent reports

CAUTION

Temporary defects in aids to navigation are not indicated on this chart. See Notice to Mariners.

Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

Mariners are warned to stay clear of the protective riprap surrounding navigational light structures shown thus ●

SMALL CRAFT WARNINGS

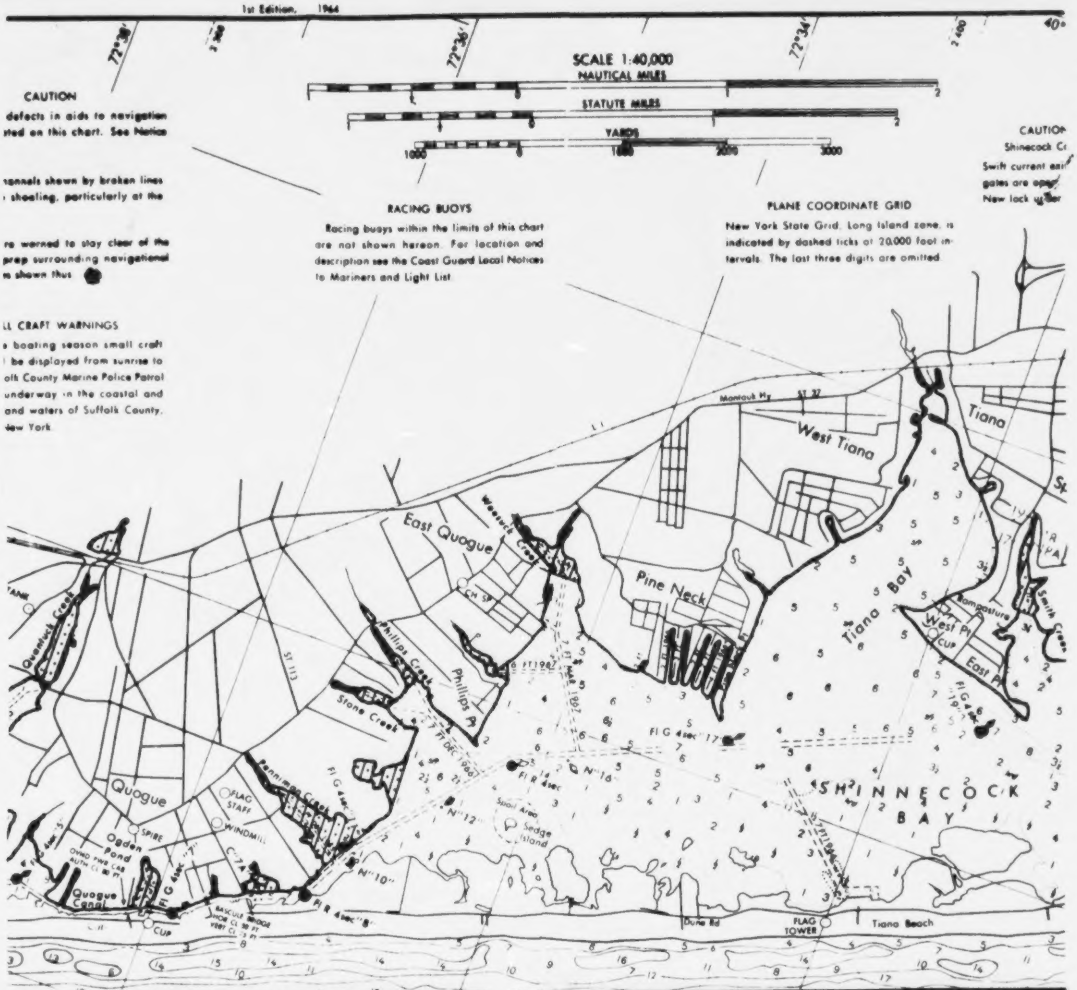
During the boating season small craft warnings will be displayed from sunrise to sunset on Suffolk County Marine Police Patrol Boats while underway in the coastal and navigable inland waters of Suffolk County, Long Island, New York.

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. For location and description see the Coast Guard Local Notices to Mariners and Light List.

PECONIC RIVER - FLANDERS BAY AREA

1st Edition, 1964



CAUTION

defects in aids to navigation
sted on this chart. See Notice

nannels shown by broken lines
shoaling, particularly at the

re warned to stay clear of the
prap surrounding navigational
s shown thus ●

LL CRAFT WARNINGS

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l be displayed from sunrise to
olk County Marine Police Patrol
underway in the coastal and
and waters of Suffolk County,
New York.

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. For location and description see the Coast Guard Local Notices to Mariners and Light List.

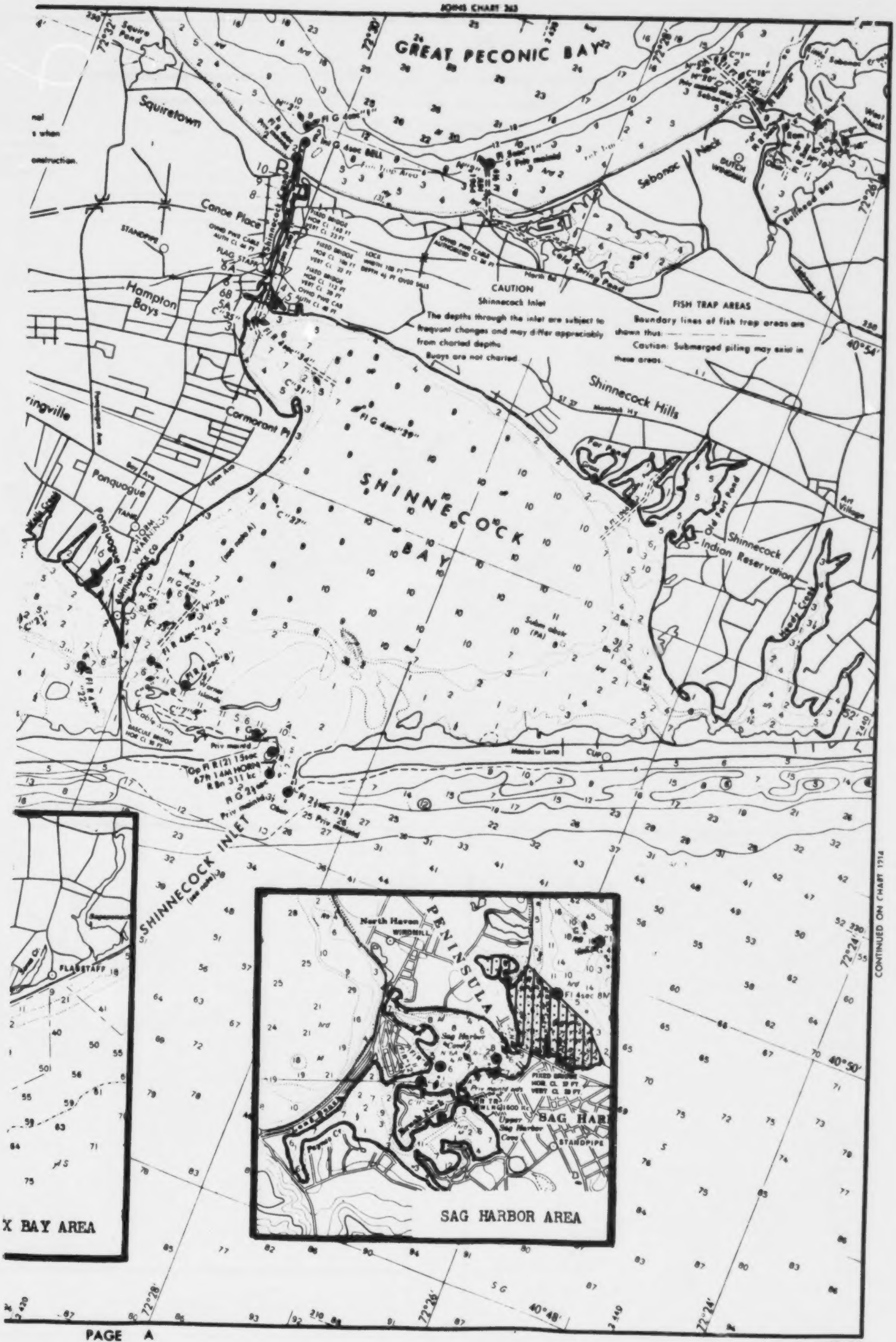
PLANE COORDINATE GRID

New York State Grid, Long Island zone, is indicated by dashed ticks at 20,000 foot intervals. The last three digits are omitted.

CAUTION

Shinecock Ca
Swift current ex
gates are ope
New lock un

CONTINUED ON CHART 1214


JOINS CHART 263
GREAT PECONIC BAY
Squire Pond
Squiretown
Canoe Place
Shinnecock Canal
STANDPIPE
FLAG STAFF
Hampton Bays
FIXED BRIDGE
LOCK
Sebonac Neck
DUTCH WINDMILL
Cold Spring Pond
Bullhead Bay
North Sea
West Neck
CAUTION
Shinnecock Inlet
The depths through the inlet are subject to frequent changes and may differ appreciably from charted depths.
Buoys are not charted.
FISH TRAP AREAS
Boundary lines of fish trap areas are shown thus:
Caution: Submerged piling may exist in these areas.
Shinnecock Hills
Montauk Hy
Cormorant Pt
Ponquogue
TANK
Shinnecock Co
SHINNECOCK BAY
Old Fort Pond
Art Village
Shinnecock Indian Reservation
Heady Creek
Warner Island
BASCULE BRIDGE
Meadow Lane
SHINNECOCK INLET
Oc Fl R (2) 15sec 67ft 14M HORN R Bn 311 kc
40°54'
40°52'
40°50'
40°48'
72°30'
72°28'
72°26'
72°24'
CONTINUED ON CHART 1214
North Haven
WINDMILL
PENINSULA
Sag Harbor Cove
Upper Sag Harbor Cove
SAG HARBOR
STANDPIPE
SAG HARBOR AREA
FLAGSTAFF
X BAY AREA

DEDICATED TO
FIGHTING FOR NEW YORK'S COASTAL FISHERMEN
L.I. LEAGUE OF SALTWATER SPORTSMEN
MAKE STRIPED BASS a GAME FISH
NO NETTING · NO SALE
CLEAN WATERS
CLEAN BEACHES
CLEAN SPORT
NO SALTWATER LICENSE
PROGRESSIVE MARINE CONSERVATION

L. I.
League of Saltwater Sportsmen, Inc.
GENERAL OFFICE:
P.O. Box 65, Flushing, N.Y. 11365
"A NON-PROFIT NON-SALARIED CONSERVATION FEDERATION
FIGHTING FOR NEW YORK'S COASTAL FISHERMEN"

July 2I, 1968

FED. WAT. POL. CENTROL ADM.
JOHN F. KENNEDY FED. BLDG.
BOSTON, MASS. 02203
ATT. JOHN S. FORLOW

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ALFRED LANGJAHR
DOMINICK PIRONE
CONSULTING BIOLOGIST

Gentlemen;

As an introduction to why I am here today at this meeting it can be readily noted from the stationary of the L.I. League of Saltwater Sportsmen, Inc., that our membership is more than deeply interested in fighting for the conservation and preservation of all our fish; wildlife and aquatic ecology and that as an officer of the League, it is my personal wish and duty to carry out the aims and policies of not only my organization but to do all in my power to help in the education of our citizens in realizing the importance of our natural resources and bringing home to them the necessity of preserving; instead of damaging or destroying such resources so they may be passed on to those that come after us. In our opinion, this must be the duty of every citizen or corporation, but unfortunately, how deeply has this been ignored by modern society. And it is from this standpoint that the remarks I will make here today are predicated.

As a sportsman and dedicated conservationist, I consider it my duty to get into today's record our desire to do our part; large or small; to publicise the necessity of protecting our natural resources that are so unable to plead their own case; and that seem [illegible] now held in low esteem by supposedly responsible citizens; corporations and legislators that seems to have become a part of modern civilization in its ruthless march down the road to disaster, particularly referring to the events of our Atomic Age, particularly the part played by the rising rash of nuclear and hydroelectric generating plants that will unquestionably play a most important part in all our lives, and it seems that the farther we go, the more complicated the subject becomes. In fact, this has become even more complicated when our Governor took quite an apparent personal interest in the extremely controvercial subject of the building of nuclear and hydroelectric generating plants when he shepherded probably the most objected to legislation in the form of Bill S 6305 that was kept quite under wraps for a long period and then literally steamrollered through the Legislature in its last dying days of the past session and then immediately sign by him into law. The very handling of that legislation has caused much concern, for no public hearings were held on such important a bill, and even now a huge campaign is mounting daily, in which the L.I. League of Saltwater Sportsmen, Inc., and the powerful Hudson River Fishermen's Association, along with growing thousands of irate citizens are now demanding the immediate repeal of that unstable legislation. The reason for this outburst of deep concern is quite evident when the wording is gone carefully over, and one's first thought is generally that it represents a complete capitulation by the State of New York to the whims; wishes; even orders of the Power Golieth and it was all believed caused by an ill-advised and dangerous marriage of the state and the power private utility groups, and that further; it could well result in creating a Frankenstein that even the designers and builders of that legislation may find it impossible to control once this combination gets a footing in our midst.

Myself and many, many, many other citizens regard this legislation with an extremely critical eye and at this point it would seem the only equitable answer would be its instant repeal and start anew in a manner worthy of this great republic, which at this very moment is so deeply involved with so-called civil rights. Let us have new and proper legislation drawn up; hold public hearings; submit honest and proper evidence by competant biologists; financial experts; and let us bring out for all to see the plots and pitfalls that must surely rise up to plague us if the present setup is unfortunately permitted to stand. Let us not be guided by a grasping few; let us decide our own fate and not have it dictated just where the Golieth decides it wants its plants to be, no matter what the owner of that property feels about, for ironically, we have already brought to light an instance where the owner of certain property on the Hudson River has been threatened with having his property taken away from by condemnation proceedings. And as one citizen remarked; " Where am I living; in free America or north Viet Nam; It was as simple as that.

One of the dangers my colleagues and myself are concerned with is what we term the " parasite " of the modern nuclear plant, now known as "Thermal Pollution," caused by the enormous amounts of highly heated water used for cooling the tremendous heats from nuclear fuels, being unceremoniously dumped back into the source of water supply the plant uses in the river; lake; bay; sound or other waterway that can be extremely dangerous; even lethal to any or all fish or other aquatic ecology it comes in contact with. This, we are now convinced has its very beginning in Thermal Pollution, and from here our troubles begin.

In early I963 I was informedof the fact that many truckloads of striped bass and other species of fish, particularly the striped bass which for centuries has been the most important species of anadromous fish that has established itself as a tremendous and important poputation in the Hudson River, where it winters; spawns and is nurseried and regarded as a premier sport and commercial asset to the river; were being dumped unceremoniously into a huge dump on the premises of the Con Edison nuclear electric generating plant at Indian Point, N.Y. on the Hudson, being covered up by a bulldozer. We immediately made a visit to the area and found it to be a fact. Even photos were taken. then after quite some communications, I received a permit to head a three-man team of sportsmen to investigate the cause of this horror, for we were aware that striped bass did winter there; then once out of their winter sleep-they went into the spawning urge, and as this tremendous kill occurred right in the center of this spewning act, we realized that to a real great extent, this would involve heavily egg laden females, and that for every egg laden female killed, several hundred thousand striped bass eggs would be destroyed forever, and when we arrived at the plant on June I2, I963, and had the opportunity to get a look under their pier that extends quite some disrance out into the Hudson, we were still not prepared for the sight we witnessed in the eyes of sportsmen and conservation-minded citizens. It was a literal horror, almost unbelievable, for here we saw untold thousands of striped bass and other species, ranging in size from three inches to twenty pounds in weight, all dead or dying, with quite a few already apparently afflicted with some sort of skin disease. Fortunately, one of our party was a member of the League; Mr. Dominick J. Pirone; a biologist; and his advice was extremely valuable.

Naturally, neither the operators of the plant could have had any ready explanation of what had caused this situation, but Mr. Pirone felt that in-as-much no other pier on the Hudson had been so implicated that the answer might not be far off. Remenber, at that time we knew little if anything of Thermal pollution. We did find that a well known engineering firm had advised the installation of perforated pipe line under the pier which they claimed the compressed air bubbles would scare the fish away, but it was our experience as long time boatmen that both heated water and the oxygen-loaded air bubbles would lure the fish in under the pier rather than chase them away. However, although I felt small about broaching our suggestion that we felt any eight year old boy could have figured out; but when we suggested they build a good wire fence around the entire pier from the bottom of the river up and above the high water line, they all gasped in surprise. Naturally, this was readily done, and not surprisingly, this to some extent did serve its purpose. However, unknown to us, there were still other important problems that still are to be investigated and resolved.

Over the years sine I963,we have kept a close surveillance over not only Indian Point but other like plants in other states as well, and as best we could we have kept fairly well abreast of the times as regard these plants, and Thermal Pollution is a subject we have given much time to, but I feel our first real breakthrough came in the form of an article in Bulletin No. I9I, published by the Sport Fishing Institute, Washington D.C. that gave a study of thermal pollution; what it was; where it came from; the damage it could cause to fish and other types of marine life; and finally; that this "parasite," of the nuclear plant could be eliminated through the installation of what is known as the "closed circuit system." On the strength of this information that has been borne out by other studies. we immediately demanded that the installation of such device be installed in every nuclear plant. However, we were to learn that the powers that be in the nuclear electric generating field feel that in the first place the installation alone would cost considerable money and that in addition to this the huge fans that would be required to remove the tremendous heat in such plants would cost some 3% in generated current and that this would evidently viewed by the officials and the stockholders as a loss they simply will not take. This has created an impasse in some quarters and is probably the reason these still refuse to use that system called the "closed circuit type." This, then; adds to our united anxiety over the passage of Bill A6305.

Before completing this paper, I do feel it proper to mention some features connected with nuclear plants not generally mentioned before and I do feel they should be made a part of this paper, and this I feel is a danger possibly equally regarded in the same category as Thermal Pollution and it may be the solution many have been seeking. This I found in a paper written by Alfred W. Eipper, I57I Slaterville Road, Ithica, New York, covering the dangers anticipated in a nuclear plant on Cayuga Lake, New York, in which he too, recommends the installation of the "closed circuit system." I will quote him: " Maintainance of steam electric power plants such as the one proposed for Cayuga Lake requires periodic flushing treatments with such compounds as chlorine (for controlling growths in the pipes), hydrochloric acid, detergents and corrosion inhibitors. All of these would have undesirable effects on the lake, but again, the magnitude cannot be predicted now." However; I ask; could this same compound or like compounds be now used at Indian Point or other such nuclear plants, that might well be the cause of some of what we witnessed at Indian Point in I963; It may be interesting to find out.

In closing , I am filing a copy of a letter sent by a Vice President of Con Edison to a small group that owns property this corporation wants to purchase. I would say this letter is one of the most un-American and despotic communications I have ever read. In my opinion this aptly shows the "Golieth2 in full stride as a result of that legislation described in Bill A 6305, which we demand should be "killed now."

Harvey E. Hauptner
Corresponding Secy.

PRESENTED BY HARVEY E. HAUPTNER

W. Donham Crawford
Administrative Vice President

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N Y 10003
Telephone (212) 460-2662

June 10, 1968

Catholic Mechanic's Union of New York
165 East 88th Street
New York, N. Y. 10028

Gentlemen

Increases in electric power load demands and further substantial increases anticipated in the immediate future make it absolutely essential that an additional nuclear energy generating plant be constructed at Montrose, New York, as soon as possible. This project is most urgent to enable this Company to fulfill its obligation to supply adequate electric power to meet the demands of the consuming public.

As you are aware, we already have acquired a number of parcels of property adjoining your property at Montrose and the acquisition of your parcel is required to provide the necessary site for the proposed generating plant.

In the course of discussions with you, we have offered to pay a fair and reasonable price to purchase your property but, as yet, this offer has not been accepted. In addition, we have proposed to acquire for you several suitable sites as a substitute for your property, but these offers, too, have not been acceptable to you.

Under the circumstances, I must advise you that unless mutually acceptable terms for our acquisition of your property are agreed upon on or before July 1, 1968, we shall have no alternative but to take the necessary steps to acquire the subject property by the institution of condemnation proceedings.

In light of our cordial relationship in the past, we are reluctant to pursue our legal remedy of condemnation unless it is absolutely necessary and would, therefore, urge that you make every serious effort to consummate the conveyance of your property to us in an amicable manner for a fair and reasonable consideration before July 1, 1968. We are available to meet with you for further discussions at any time.

Very truly yours

W. Donham Crawford

cc: Theobald J. Dengler, Esq.
170 Broadway
New York, N. Y. 10038

(OVER)

Here, in the opinion of many is a rank example of the despotic Power Golieth showing its teeth. What will follow: A dictatorship. This must be repealed NOW.

Presented by Harry F. [illegible]

STATE OF NEW YORK

L.I. League [illegible] Franklin Sq

6305

IN ASSEMBLY

February 20, 1968

Introduced by Messrs. TRAVIA, WEINSTEIN, DURYEA—read once and referred to the Committee on Rules

AN ACT

To amend the public authorities law, in relation to the powers of the power authority of the state of New York and of New York state atomic and space development authority

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section one thousand one of the public authorities law, as amended by chapter one hundred forty-six of the laws of nineteen hundred fifty-one, is hereby amended to read as follows:

§ 1001. Declaration of policy. Those parts of the Niagara and Saint Lawrence rivers within the boundaries of the state of New York are hereby declared to be natural resources of the state for the use and development of commerce and navigation in the interest of the people of the state and the United States. In order to provide for the most beneficial use of these natural resources, for the creation and development of hydroelectric power in the interest of the people of this state, and to preserve and enhance the scenic

EXPLANATION — Matter in *italics* is new; matter in brackets [ ] is old law to be omitted.

beauty of the Niagara Falls and river, such natural resources, including the beds and waters of the said rivers as instrumentalities of commerce and navigation, and the beds, waters, power and power sites in, upon or adjacent to or within the watersheds of the said rivers, owned or controlled by the people of the state, or which may hereafter be recovered by or come within their ownership, possession and control, shall always remain inalienable to, and ownership, possession and control thereof shall always be vested in, the people of the state.

It is further declared that the need for obtaining and maintaining a continuous and adequate supply of dependable electric power and energy is a matter of public concern to the people of the state; that the maximum capacity of the hydroelectric developments on the Niagara and Saint Lawrence rivers of the authority can be best utilized and additional public benefit derived therefrom by provision for supplemental base load nuclear generating facilities and that for the purposes (i) of so utilizing such capacity and of deriving such additional benefit, (ii) of providing additional low cost power and energy to attract and expand high load factor industry, (iii) of continuing an adequate supply of power and energy for the future needs of its municipal electric systems and rural electric cooperative customers, and (iv) of assisting in the development of additional dependable hydroelectric power from other waters of the state and in the development of advanced facilities having substantial prospects of reducing electricity production costs, the public interest requires that the authority participate in the generation of supplemental electric power and energy *by pumped storage hydroelectric and nuclear means to the extent authorized in this title.*

It is further declared (i) that there should be full cooperation among private and public entities including the authority, municipal corporations and rural electric cooperatives engaged in power generation, transmission and distribution and in associated developmental and service activities, (ii) that it is desirable that the authority and the utilities which with the authority constitute the New York power pool exchange comparable cost, performance and operating data with respect to generation by nuclear means particularly reflecting the effect of the authority's tax-free status, (iii) that it is desirable and reasonable that the authority sell power and energy from its projects other than the Niagara and Saint Lawrence hydroelectric projects, not needed for its high load factor industrial, municipal and rural electric cooperative customers to other members of the New York power pool for resale without discrimination under their respective tariffs and (iv) that it is desirable that the authority, in order to cooperate in New York state atomic and space development authority's program for maximum development and peaceful use of atomic energy, utilize nuclear fuel supplied by New York state atomic and space development authority provided it is available and its utilization is not to the significant economic disadvantage of the authority and not operationally infeasible.

§ 2. Section one thousand two of such law, as amended by chapter one hundred forty-six of the laws of nineteen hundred fifty-one, is hereby amended to read as follows:

§ 1002. Power authority of the state of New York. For the purpose of effectuating the policy declared in section one thousand one of this chapter [and of improving the Niagara and Saint Lawrence rivers as instrumentalities of commerce and navigation and developing the hydro-electric power resources thereof] there is hereby created a corporate municipal instrumentality of the state to be known as "Power Authority of the State of New York", [hereinafter] in this title referred to as "the authority", which shall be a body corporate and politic, a political subdivision of the state, exercising governmental and public powers, perpetual in duration, capable of suing and being sued, and having a seal, and which shall have the power and duties hereinafter enumerated, together with such others as may hereafter be conferred upon it by law.

It shall report annually to the governor and the legislature upon its operations and transactions.

§ 3. Section one thousand five of such law, the opening paragraph, subdivisions one, two, three, five, the opening paragraph and paragraphs g, i and j of subdivision six and subdivision seven having been last amended by chapter one hundred forty-six of the laws of nineteen hundred fifty-one, is hereby amended to read as follows:

§ 1005. Power and duties of authority. Forthwith upon the appointment and organization of the trustees and subject to the conditions and limitations in this title contained, the authority, in cooperation with the proper Canadian authorities and those of the United States as hereinafter directed, shall proceed with the improvement and development of the Niagara river and the international rapids section of the Saint Lawrence river (which is defined as that part of the said river from Ogdensburg to the point where it leaves the territory of this state) for the aid and benefit of commerce and navigation and for the development of the hydro-electric power inherent therein in accordance with the provisions of this title.

The authority is authorized to construct throughout its area of service (a) such hydroelectric pumped storage projects, as it deems necessary or desirable to supplement the supply of electric power and energy and (b) such baseload nuclear generating facilities as in its judgment are necessary (i) to supply sufficient supplemental energy to make possible optimum use of the generating capacity of the authority's Saint Lawrence and Niagara hydroelectric projects, (ii) to supply low cost power and energy to high load factor manufacturers which will build new facilities in the authority's area of service or expand existing facilities provided such power and energy is made available to them, and (iii) to supply the future needs of the authority's existing municipal electric and rural electric cooperative customers.

A high load factor manufacturer is one which normally utilizes a minimum electric demand of five thousand kilowatts and which will normally utilize energy at the rate of approximately five hundred forty kilowatt hours per month for each kilowatt of demand and of which the cost of electricity normally represents at least seven and one-half percent of its total product value.

The authority is authorized and directed: 1. To cooperate with the appropriate agencies and officials of the United States government to the end that any *hydroelectric* project *on the Niagara or Saint Lawrence rivers* undertaken under [the authority of] this title shall be consistent with and in aid of [the] *any* plans of the United States for the improvement of commerce and navigation along [the Niagara and Saint Lawrence] *such* rivers and shall be so planned and constructed as to be adaptable to the plans of the United States therefor, so that the necessary channels, locks, canals, and other navigational facilities may be constructed and installed by the United States, in, through, and as part of such projects.

2. To negotiate with the appropriate Canadian authorities and agencies respecting the improvement and development of the Niagara river, and international rapids section of the Saint Lawrence river for the aid and benefit of commerce and navigation and the development of hydroelectric power therefrom, and to plan and agree with them upon cooperative action to that end including any shifting of international boundary lines between Canada and the United States and upon the use, control and disposition of the facilities to be created and the hydroelectric power to be developed by any project [authorized by this title] *constructed in such rivers.* Such negotiations and agreements shall be conducted and concluded with due regard to the position of the United States in respect to international agreements, and any such agreements as may be reached with Canadian authorities or agencies may be submitted by the authority to congress for its approval, if it be advised that such approval is necessary or desirable.

3. To apply to the appropriate agencies and officials of the United States government and/or of [the Dominion of] Canada or its provinces, including the federal power commission, *the atomic energy commission,* and the international joint commission, for such licenses, permits or approval of its plans or projects as it may deem necessary or advisable, and in its discretion, and upon such terms and conditions as it may deem appropriate, to accept such licenses, permits or approvals as may be tendered to it by such agencies or officials *and such federal or other public or governmental assistance as is now or may hereafter become available to it;* and to enter into contracts with such agencies or officials *or utility companies* relating to the construction or operation of [the] *any* project[s] *authorized by this title.* Neither the authority nor any trustee, officer or agent thereof shall have any power to waive or surrender for any purpose whatsoever any right of the state of New York, whether sovereign or proprietary in character, in and to the Niagara and Saint Lawrence rivers, their waters, power, channels, beds, or uses, or the right of the state to assert such rights at any future time; provided, however, that nothing herein contained shall be construed as limiting the power of the authority to accept [a license] *licenses* issued by the federal power commission pursuant to the provisions of the federal power act, as amended, *or by the atomic energy commission pursuant to the provisions of the atomic energy act of 1954, as amended,* and the terms and conditions therein imposed pursuant to law. If for any reason the authority shall fail to secure any such license, permit or approval as it may deem necessary or advisable, or shall decide not to make

application therefor, it is authorized to institute suit, or to apply to congress for legislation, or take such other action in the premises as it may deem necessary or advisable, in the furtherance of the project and for the protection of its rights and those of the state.

4. To study the desirability and means of attracting industry to the state of New York[, consistent with and in effectuation of the policy declared in sub-paragraph five immediately following].

5. To develop, maintain, manage and operate those parts of the *Niagara and Saint Lawrence hydroelectric* projects owned or controlled by it in such manner as to give effect to the policy hereby declared (and all plans and acts, and all contracts for the use, sale, transmission and distribution of the power generated by [the said] *such* projects, shall be made in the light of, consistent with and subject to this policy), namely, that [the] *such* projects shall be in all respects for the aid, improvement, and benefit of commerce and navigation in, through, along and past the Niagara river, the Saint Lawrence river and the international rapids section thereof and that in the development of hydroelectric power therefrom such projects shall be considered primarily as for the benefit of the people of the state as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that the sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns to permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity. In furtherance of this policy and to secure a wider

distribution of such power and use of the greatest value to the general public of the state, the authority shall in addition to other methods which it may find advantageous make provision so that municipalities and other political subdivisions of the state now or hereafter authorized by law to engage in the distribution of electric power may secure a reasonable share of the power generated by such projects, and shall sell the same or cause the same to be sold to such municipalities and political subdivisions at prices representing cost of generation, plus capital and operating charges, plus a fair cost of transmission, all as determined by the trustees, and subject to conditions which shall assure the resale of such power to domestic and rural consumers at the lowest possible price, provided, however, that in disposing of hydroelectric power pursuant to and in furtherance of the aforementioned policy and purposes, appropriate provision may also be made to allocate a reasonable share of project power to agencies created or designated by other states and authorized to resell the power to users under the same terms and conditions as power is disposed of in New York state. To that end, the authority may provide in any contract or contracts which it may make for the sale, transmission and distribution of the power that the purchaser, transmitter or distributor shall construct, maintain and operate, on such terms as the authority may deem proper, such connecting lines as may be necessary for transmission of the power from main transmission lines to such municipalities or political subdivisions.

[6. To negotiate in the manner hereinafter provided a contract or contracts**]** *Contracts* for the sale, transmission and distribution of power generated by [any project authorized by this title which by the terms thereof will] *such projects shall provide for the effectuation of the foregoing policy and shall* provide:

a. Payment of all operating and maintenance expenses of the project.

b. Interest on and amortization and reserve charges sufficient within fifty years of the date of issuance to retire the bonds of the power authority issued for the project.

c. Continuous control and operation of the project by the authority.

d. The effectuation of the policy declared in *this* sub-paragraph [five above].

e. Full and complete disclosure to the authority of all factors of cost in the transmission and distribution of power, so that rates to consumers may be fixed initially in the contract and may be adjusted from time to time on the basis of true cost data, provided that in fixing such cost of transmission and distribution no account shall be given to any franchise value, going value or good-will based upon the existence of the contract and the availability of the power for sale by the transmitting or distributing company or any company associated therewith.

f. Periodic revisions of the service and rates to consumers on the basis of accurate cost data obtained by such accounting methods and systems as shall be approved by the trustees and in furtherance and effectuation of the policy declared in *this* sub-paragraph [five above].

g. That the rates, services and practices of the purchasing, transmitting and/or distributing public agencies or companies in respect to the power generated by such projects shall be governed by the provisions and principles established in the contract, and not by regulations of the public service commission or by general principles of public service law regulating rates, services and practices.

h. The rate structures agreed upon in such contract may provide different rates for different localities, classes of consumers, and amounts of current consumed, and for changes in the rates resulting from variation in operating costs and fixed charges.

i. For the cancellation and termination of any such contract upon violation of the terms thereof by the purchasing, transmitting or distributing public agency or company, or any subsidiary or associate thereof.

j. For such security for performance as the authority may deem practicable and advisable, including provisions assuring the continuance of service by the purchasing, transmitting and/or distributing public agencies or companies and/or the use of their facilities for such service and/or the continuance of an outlet and adequate market for the power generated by such projects.

k. Such other terms not inconsistent with the provisions and policy of this title as the authority may deem advisable.

6. To develop, maintain, manage and operate its projects other than the Niagara and Saint Lawrence hydroelectric projects so as (i) to provide an adequate supply of energy for optimum utilization of its hydroelectric projects, (ii) to attract and expand high load factor industry, (iii) to provide for the additional needs of its municipal electric and rural electric cooperative customers and *(iv) to assist in maintaining an adequate, dependable electric power supply for the state.*

Contracts for the sale, transmission and distribution of power and energy generated by such projects shall provide for the effectuation of the policy set forth in this title relating to such projects and shall provide:

a. Payment of all operating and maintenance expenses of the projects.

b. Interest on and amortization and reserve charges sufficient within fifty years of the date of issuance to retire the bonds of the authority issued for the projects.

c. For the cancellation and termination of any such contract upon violation of the terms thereof by the purchasing, transmitting or distributing public agency or company, or any subsidiary thereof.

d. That the rates, services and practices of the purchasing, transmitting and/or distributing public agencies and rural electric cooperatives in respect to the power and energy from such projects shall be governed by the provisions and principles established in the contract, and not by regulations of the public service commission or by general principles of public service law regulating rates, services and practices.

e. Such other terms not inconsistent with the provisions and policy of this title as the authority may deem advisable.

7. To proceed with the physical construction of any project authorized by this title, including the erection of the necessary dams, power houses and other facilities, instrumentalities and things necessary or convenient to that end, and including also the erection

of such transmission lines as may be necessary to conduct electricity to industrial users located at or near the site; and including also the acquisition, by contract only with the owners thereof, of transmission lines or the use of such transmission lines, available or which may be made available, to conduct electricity to such point or points at which the electricity is sold by the authority to any person, corporation or association, public or private, engaged in the business of distribution and sale of electricity to ultimate consumers or if the authority is unable to so acquire by contract the ownership or use of such transmission lines, including also the erection by the authority of transmission lines necessary for such purposes; and thereafter to maintain and operate the project in accordance with the provisions and policy of this title. The authority is specifically authorized to undertake the construction of any project in one or more steps as it may find economically desirable or advantageous, and as it may agree with the appropriate Canadian and/*or* United States authorities. Whenever in this title reference is made to "project", it shall be understood to refer to such part of any project authorized by this title as may from time to time be in existence or immediately projected.

8. To cooperate with and, when the trustees deem it feasible and advisable, to enter into contractual arrangements with utility companies;

a. With respect to construction and operation of pumped storage facilities by the authority and supply of all or part of the necessary pumping energy by the utilities and their purchase of all or part of the output.

b. With respect to construction, ownership and/or operation of baseload nuclear generating facilities, docks, sidings, loading or unloading equipment, storage facilities and other subsidiary facilities and disposition of the output of such generating facilities.

c. With respect to construction, ownership, operation and/or use of transmission facilities.

9. To cooperate with and, when the trustees deem it feasible and advisable, to enter into contractual arrangements with New York state atomic and space development authority in connection with the planning, siting, development, construction, operation and maintenance of nuclear generating facilities of the authority to the extent such action is consistent with the purposes and powers granted by law to New York state atomic and space development authority.

10. To utilize nuclear fuel supplied and owned by New York state atomic and space development authority unless such fuel is unavailable or unless the trustees determine that to utilize such fuel would result in a significant economic disadvantage to the authority or would not be operationally feasible.

[8.] *11.* To exercise all the powers necessary or convenient to carry out and effectuate the purposes and provisions of this title; and as incidental thereto to own, lease, build, operate, maintain and dispose of real and personal property of every kind and character, to acquire real property and any or every interest therein for its lawful purposes by purchase, or by condemnation as hereinafter provided, to borrow money and secure the same by bonds or liens upon revenue from any property or contracts held or to be held by it, to sell water or electric power, and generally to do any and everything necessary or convenient to carry out the purposes of this title, provided that the authority shall have no power at any time to pledge the credit of the state nor shall any of its obligations or securities be deemed to be obligations of the state nor shall the authority have the power to lease or sell any dam, or power house at the site.

[9.] *12.* Notwithstanding any limitations hereinbefore expressed, the authority is authorized and directed forthwith or from time to time as it shall deem advisable and within the limitations of the appropriations made available for it to initiate and prosecute all inquiries, investigations, surveys and studies which it may deem necessary or desirable as preliminary to the effectuation of the other powers and duties conferred upon it by this title.

§ 4. The first paragraph of subdivision ten of section one thousand seven of such law, as last amended by chapter six hundred forty-six of the laws of nineteen hundred fifty-eight, is hereby amended to read as follows:

The authority may determine what real property is reasonably necessary for the [improvement and development of the Niagara river or the international rapids section of the St. Lawrence river] *construction or operation of any project authorized by this title including transmission facilities.* If funds are made available by the authority to the state for payment of the cost and expense of the acquisition thereof, the superintendent of public works when requested by the authority, shall acquire such real property in the name of the state by appropriation and, where necessary, remove the owner or occupant thereof and obtain possession, according to the procedure provided by section thirty of the highway law, insofar as the same may be applicable. The authority shall have the right to possess and use for its corporate purposes, so long as its corporate existence shall continue, all such real property and rights in real property so acquired.

§ 5. Section one thousand nine of such law, is hereby amended to read as follows:

§ 1009. Contracts negotiated by authority. Contracts negotiated by the authority as provided in sub-paragraph *five or* six of section one thousand five of this [chapter] *title* shall be entered into and executed as follows:

1. After agreement upon the terms of any such contracts shall have been reached by the authority and its co-party or co-parties, the authority shall hold a public hearing or hearings upon the terms thereof. At least thirty days' notice of such hearing shall be given by publication once in each week during such period in each of six newspapers within the state to be selected by the authority. Copies of proposed contracts shall be available for public inspection during such period of thirty days at the office or offices of the authority and at such other places throughout the state as it may designate.

2. Following such public hearing, the authority shall reconsider the terms of the proposed contract or contracts and shall negotiate such changes and modifications in the contract or contracts as it then deems necessary or advisable.

3. When such contract or contracts are finally agreed upon in

terms satisfactory to the authority and its co-party or co-parties, and which the authority believes to be in the public interest, the authority shall thereupon report the proposed contract or contracts, together with its recommendations and the record of the public hearings thereon to the governor of the state who shall within sixty days thereafter indicate his approval or disapproval thereof and give his reasons therefor.

4. If the governor shall approve such contract, then the same shall be executed by the chairman and secretary of the authority and it shall thereupon come into full force and effect and be binding upon the authority and all other parties thereto in accordance with its terms.

§ 6. Subdivision five of section one thousand ten of such law, as amended by chapter five hundred fifty-two of the laws of nineteen hundred sixty-two, is hereby amended to read as follows:

5. The bonds may be issued payable in annual instalments or may be issued as term bonds or the authority in its discretion, may issue bonds of both types. The bonds shall be authorized by resolution of the trustees of the authority and shall bear such date or dates, mature at such time or times, not exceeding fifty years from their respective dates, bear interest at such rate or rates, [not exceeding five per centum per annum,] payable annually or semi-annually, be in such denominations, be in such form, either coupon or registered, carry such registration privileges, be executed in such manner, be payable in lawful money of the United States of America at such place or places, and be subject to such terms of redemption, as such resolution or resolutions may provide.

In the event that term bonds are issued, the resolution authorizing the same may make such provisions for the establishment and management of adequate sinking funds for the payment thereof, as the authority may deem necessary. The bonds or notes may be sold at public or private sale for such price or prices as the authority shall determine [, but which shall not at the time of sale yield more than five per centum per annum]. Pending preparation of the definite bonds, the authority may issue interim receipts which shall be exchanged for such bonds.

§ 7. Section one thousand eleven of such law, as last amended by chapter one hundred forty-six of the laws of nineteen hundred fifty-one, is hereby amended to read as follows:

§ 1011. Agreement of the state. 1. The state of New York does hereby pledge to and agree with the holders of any obligations issued under this title, and with those parties who may enter into contracts with the authority pursuant to the provisions in sub-paragraph *five or* six of section one thousand five above, that the state will not limit or alter the rights hereby vested in the authority until such obligations together with the interest thereon are fully met and discharged and/or such contracts are fully performed on the part of the authority, provided that nothing herein contained shall preclude such limitation or alteration if and when adequate provision shall be made by law for the protection of the holders of such obligations of the authority or those entering into such contracts with the authority. The authority as agent for the state is authorized to include this pledge and undertaking for the state in such obligations or contracts.

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2. Nothing in this title shall be construed as diminishing or enlarging any valid existing rights under any license heretofore issued pursuant to the provisions of the federal power act.

§ 8. Section one thousand fourteen of such law, as amended by chapter one hundred forty-six of the laws of nineteen hundred fifty-one, is hereby amended to read as follows:

§ 1014. Public service law not applicable *to authority*; inconsistent provisions in other acts superseded. The rates, services and practices relating to the generation, transmission, distribution and sale *by the authority*, of power to be generated from the projects authorized by this title shall not be subject to the provisions of the public service law nor to regulation by, nor the jurisdiction of the department of public service [, but shall be regulated and determined under the provisions of the contracts entered into by the authority as provided in sub-paragraph six of section one thousand five of this chapter]. The provisions of the public service law and of the conservation law and every other law relating to the department of public service or the public service commission or to the conservation department or to the functions, powers or duties assigned to the division of water power and control by chapter six hundred nineteen, of the laws of nineteen hundred twenty-six, shall so far as is necessary to make this title effective in accordance with its terms and purposes be deemed to be superseded, and wherever any provision of law shall be found in conflict with the provisions of this title or inconsistent with the purposes thereof, it shall be deemed to be superseded, modified or repealed as the case may require.

§ 9. Section eighteen hundred fifty-four of such law, as amended by chapter three hundred sixty-six of the laws of nineteen hundred sixty-four, is hereby amended to read as follows:

§ 1854. Purposes and specific powers of the authority. The purposes of the authority shall be to encourage and cooperate in the maximum development and use of atomic energy for peaceful and productive purposes within the state and in the active furtherance of space activities within the state. In carrying out such purposes, the authority shall, with respect to the activities specified, have the following powers:

1. Research and development. To conduct, sponsor, assist and foster programs of research and development in the methods of production and use of atomic energy and programs relating to space activities, including the power to establish, acquire, operate, develop and manage facilities therefor.

2. The provision of services. To provide services required for the development and use of atomic energy and services required for space activities by the industrial, commercial, medical, scientific, educational and governmental organizations within the state, including the power to establish, acquire and develop facilities therefor not otherwise available within the state, and to operate and manage such facilities.

3. Cooperation with power companies. To contract with or enter into joint undertakings with any power company, or power authority of the state of New York, or more than one of them, to

(a) Participate in the construction and operation of experimental or developmental nuclear power facilities within the state

of types which, by reason of advanced design concepts, have substantial prospects of reducing power production costs.

(b) Participate in the incorporation of features in nuclear power plants and the construction of associated facilities to the extent required by the public interest in development, health, recreation, safety, conservation of natural resources and aesthetics.

(c) Develop, prepare, and furnish by sale or lease real property owned, held, or acquired by the authority within the state to be used for the construction and operation of nuclear power plants and related facilities,

Provided that no such contract or joint venture shall be entered into which shall permit the authority to distribute or sell any power or energy to any person or entity other than the other contracting party or parties or joint venturer or venturers, and provided further that all power and energy received by power authority of the state of New York, pursuant to any such contract or joint venture, shall be distributed and sold only to such persons as power authority of the state of New York may sell power produced by its nuclear generating facilities, pursuant to law.

4. Water desalination. To contract with one or more water distribution companies or agencies to participate in the construction and operation of nuclear facilities for the purpose of desalination or distribution of water, and to develop, prepare, and furnish by sale or lease, real property owned, held or acquired by the authority within the state to be used for the construction and operation of such facilities and facilities related thereto, provided that the authority shall not enter into any such contract relating to any *such facility which also produces electric power for purposes of sale unless the authority also contracts with one or more power companies with respect to the construction and operation of such facility and the distribution and use of such power.*

5. Provision of nuclear fuel. To acquire and lease or otherwise make available nuclear fuel for use in the production of power, the desalination of water or for any other useful purpose within the state.

[3.**]** *6.* The dissemination of information. To accumulate and disseminate information relating to the development and use of atomic energy and relating to space activities, including the power to conduct, sponsor, assist and foster studies and surveys, and publish the results thereof.

In exercising the powers granted by this title, the authority shall, insofar as practicable, cooperate, and act in conjunction with industrial, commercial, medical, scientific and educational organizations within the state, and with agencies of the federal government, of the state and its political subdivisions, of other states, and joint agencies thereof.

In carrying out its corporate purposes and in exercising the powers granted by this title, the authority shall be regarded as performing an essential governmental function.

§ 10. Subdivision one of section eighteen hundred sixty of such law, as amended by chapter three hundred sixty-six of the laws of nineteen hundred sixty-four, is hereby amended to read as follows:

1. The authority shall have the power and is hereby authorized to issue at one time or in series from time to time its bonds and notes in such principal amounts as, in the opinion of the authority, shall be necessary to provide sufficient moneys for achieving the authority's corporate purposes, including the establishment of reserves to secure the bonds and notes and the payment of interest on bonds and notes **[**, which bonds and notes, however, shall not exceed an aggregate principal amount of thirty million dollars ($30,000,000), excluding bonds and notes issued to refund, renew or pay outstanding bonds and notes**]**.

§ 11. Title nine of article eight of such law is hereby amended by adding thereto a new section, to be section eighteen hundred seventy, to read as follows:

§ 1870. Public service law not applicable to authority. The authority shall not be subject to the provisions of the public service law or to regulation by or the jurisdiction of the department of public service or the public service commission by reason of any contract, agreement or arrangement entered into by the authority with any power company, any water distribution company or agency or the power authority of the state of New York, or more than one of the above, or by reason of any action taken thereunder by the authority.

§ 12. This act shall take effect immediately.

SUFFOLK COUNTY
DEPARTMENT OF HEALTH
SUFFOLK COUNTY CENTER
RIVERHEAD, NEW YORK 11901

GEORGE E. LEONE, M.D., M.P.H.
COMMISSIONER

July 18, 1968

Mr. John S. Farlow
Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Re: Public Meeting of Pollution of
Estuarine Waters, July 23, 1968,
Rockefeller University, New York City

Dear Mr. Farlow:

Please find enclosed a statement of the Suffolk County Department of Health to be entered into the record of the scheduled public hearing on pollution of estuarine waters.

Sincerely yours,

George E Leone
George E. Leone, M.D.
Commissioner of Health

GEL/gph

Att.

Statement of the Suffolk County Department of Health, Riverhead, New York, George E. Leone, M.D., Commissioner, to be presented at public hearing held by the Federal Water Pollution Control Administration on the National Estuarine Pollution Study, July 23, 1968, at Rockefeller University, New York, New York.

The Suffolk County Department of Health recognizes the need for the concerted efforts by all concerned in taking protective measures for the conservation of our precious estuarine waters.

Our exploding population with the resultant building boom has resulted in huge pollutional loads being placed upon our waters. Since 1955 our population has increased from some 400,000 to over 1,000,000.

In the absence of municipal sewer districts we have relied heavily upon septic tanks and cesspools as a means of disposing of our domestic and industrial wastes. This has resulted in a serious deterioration of the quality of the glacial water stratum in the populated areas of the county.

The contaminants reaching our ground waters not only damage our drinking water sources but also have a direct relation to the pollution of our estuarine waters.

A cooperative study carried out several years ago in the Great South Bay revealed that the ground waters entering the bay carried with them over 50 tons per year of phosphates. The main source of phosphates was attributed to household detergents which had entered the ground water via cesspool and septic tank systems. The joint study report prepared by the New York State Department of Health, the U. S. Public Health Service, the New York State Conservation Department and the Long Island State Park Commission and the Suffolk County Department of Health reached the following conclusions:

The waters of Great South Bay are abnormally enriched by nutrients having their principal origin in organic wastes produced by human activities. These wastes come largely from sewage effluents reaching the ground water which is discharged to the Bay. Where the soil is porous and the subsurface disposal systems are operating adequately, the wastes are easily leached into the ground water. If the soil is not conducive to the use of subsurface systems, overflows will occur which find their way into the surface streams. Organic nitrogen, coliform organisms and synthetic detergents all indicate that human wastes are entering the watercourses. In the western portion of the Bay a significant amount of nutrients come from duck farms.

Contamination of the bay waters from the sources indicated provide ample nutrients to support the large plankton population. Algae of all kinds will continue to flourish and to produce occasional excessive blooms so long as the ground and surface waters continue to receive the liquid wastes described. As population density increases, the situation may be expected to become worse.

The main recommendation to improve the water quality of the Great South Bay included in this study report was for a comprehensive public sewage system to serve the entire drainage basin. Further, that the sewage treatment plants serving this area have their effluent disposal either returned to the ground after a very high degree of treatment or piped to the ocean waters.

Another major contributor of pollution to the estuarine waters of Suffolk County are the duck farms. Suffolk County has at present 34 active duck farms where some 7,000,000 ducks are raised and processed annually. To appreciate the pollutional loads by duck farms our engineers have estimated that some 70 tons of total solids are produced per day with over 43 tons as suspended solids; 11 tons of BOD are produced per day plus over 4 tons of phosphates and 2½ tons of nitrogen compounds per day.

There has been a major step taken recently to alleviate the duck farm pollution problem in that 32 farms have complied with the State Commissioner of Health's orders in either removing their ducks off the natural waters or have constructed aerated lagoon-chlorination systems. These new treatment devices are capable of removing over 90% of the BOD and suspended solids plus reducing the coliform organisms to an acceptable level.

However, even if we are successful in obtaining treatment of all duck farm discharges there are vast amounts of bottom sediments in the tributaries to the bays in depth up to 10 feet. A recent survey of bottom sludge in the Moriches Bay Area revealed that there are some 7,000,000 cubic yards of such sediments.

Suffolk County has initiated measures to cope with the advance of pollution of our water resources.

1. A comprehensive public sewage plan was recently completed covering the five western towns of the county through a State Health Department grant of $660,000. A similar study is planned to be initiated in the near future for the five eastern towns.

2. The Suffolk County Board of Supervisors have reorganized the Suffolk County Sewer Agency. The agency is diligently working toward an early referendum for the establishment of Suffolk's first county district.

3. A comprehensive water supply plan for Suffolk County is being carried out under a $340,000 New York State Department of Health grant. In addition, the County of Suffolk is contributing some $800,000 for the installation of a series of 14 deep test wells covering the unexplored water strata of eastern Suffolk.

4. The Suffolk County Board of Health enacted local regulations effective January 1, 1965 which require the installation of public sewage collection and treatment facilities for 100 plus home realty subdivision, large apartment projects and shopping centers.

5. Research has been carried out under the Health Department's supervision with the aid of state and federal funds on the pollutional effects of detergents and other sewage constituents upon the ground waters; procedures for recharging treated sewage effluent into the glacial aquifer.

There is no doubt that we have made a belated start and we face high costs and many years of hard work if we wish to protect our precious natural resources for our future generations.

Clean water has a price tag. Dirty water costs more, much more than we can possibly afford. The current sources of federal and state grants need to be increased for those communities unable to meet their commitments. Grant monies should be made available to sewage collection systems as well as treatment facilities. Untreated waste is everybody's business.

BLUEPOINTS COMPANY, INC.

TELEPHONES:
(516) 589-0123
0124

ATLANTIC AVENUE
WEST SAYVILLE, LONG ISLAND
N. Y. 11796

July 19, 1968

Mr. John S. Farlow
Regional Coordinator,
National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Sir:

RE: National Estuarine Pollution Meeting,
July 23, 1968

Our interest in the matter under consideration has already been recorded. We herewith submit for the Minutes a previous statement, typical of our concern, offered in support of the ill-fated H.R. 25 (the Dingell Bill.)

Thank you for the opportunity to add to the Minutes.

Very truly yours,

BLUEPOINTS COMPANY, INC.

HH Mercer

Hugh H. Mercer
President

HHM:lbb

Encs.

Hugh Mercer, Bluepoints Company

My name is Hugh H. Mercer. I am president of Bluepoints Company, Inc., a shellfish growing and shipping firm located in West Sayville, L. I., New York. I represent a commercial interest and therefore approach the problem under consideration from that viewpoint.

The firm I represent has had a continuous existence as an entity since 1886. It has grown and shipped hard clams and oysters for seventy-five years. Part of the explanation for what is longevity in American business annals lies in the degree of control it exercises over its underwater farm land through perpetual franchises and ownership in fee simple.

This ownership has permitted, indeed encouraged, us to undertake investment in projects that would be impractical, indeed, foolhardy, for the usual shellfish venture. We have worked in the development of sophisticated mechanized harvesters, have utilized chemical control of water predators, have pioneered in commercial shellfish hatcheries where clams and oysters are spawned and grown.

One of the prices of ownership, however, is commitment and we are committed to dependence upon an estuarine area. Now these areas are regions of high food potential. They are, in reality, great "soup pots" in which animals high in protein graze on microscopic plantlife. Since the Roman days these salty fields have been harnessed by varying degrees of cultivation.

With intensive cultivation (not as great as that of Japan or other Eastern nations where pond farming is a high art) as in the highly capitalized Northeast oyster industry, we have in our own Company sustained yields of five hundred bushels of oysters per acre, or 4000 pounds of protein food. (Oysters are about 14% protein by weight.) Even under fairly primitive conditions, with the use of mechanized equipment, and aided by enforced conservation practices, we have maintained a yield of 300 pounds of protein food per acre, an equivalent of 450 gallons of whole milk or the production of eighty milch cows. These figures should be contrasted to the average of 150 pounds of protein food obtainable from an acre of upland grazing. And, recall this marine grazing is on "free" feed.

I have dwelt overly long on the details of our parochial concern since it is what the knowledgeable have come to call "aquiculture." We at Bluepoints have proved for years (and we are not alone in this regard) that the protein value of the estuarine area is a fact. Now this value is recently more and more recognized as a major consideration in planning for such areas.

An example is found in a White House Report dated June, 1966 and entitled "Effective Use of the Sea." From this report we quote: "...Although the opportunities to enrich man's food supply in the fishing of the open sea are significant, they are limited. An entirely differenct set of opportunities are offered by the potential crop that might be obtained by systematic farming of restricted areas of the sea--'aquiculture.' An example would be Bluepoints Company, Inc. The Report continues, "The most appealing opportunities for aquiculture exist in our estuaries and coastal waters, regions which are most accessible and amenable to control and management."

But the same panel notes: "Unfortunately, such areas are often public health hazards and national disgraces rather than opportunities for the production of valuable marine products."

(H. Mercer) At this moment our estuaries are under attack by the short-sighted, the indifferent, the venal. These are the demands that view the estuary as sewage pit, as fill area, as the basis of cheap developmental land. These are the views that do not see these areas as vast grazing lands of the least expensive forms of feed, areas that once lost are probably irretrievable. These views do not grasp that the frontier of the open sea is already closing. Massive fleets of Japanese trawlers and of Russian factory ships are already straining the ocean's potential. (See attached clipping)

And what is worst of all, these are the views that too often sway the attitudes and decisions of local and state authorities responsible for these invaluable areas. Other participants in these hearings will spell out this continuing chronicle of neglect and willful waste. I will not add our own woeful experiences in this regard.

It is now that those who understand must anticipate the future and conserve what is left of the thousands of acres of estuarine environment. For these are not only areas of great beauty, of recreation and pleasure, but are areas that have already proved their worth as vast food larders.

I therefore highly recommend that sympathetic review be made of the bill before this committee and strongly urge its rapid adoption.

# # # # #

J. Richards Nelson, Chairman, Connecticut Shellfish Commission

My name is J. Richards Nelson. My business is growing oysters, being Treasurer and General Manager of the F. Mansfield and Sons Company of New Haven, Connecticut, who have been oyster planters since 1846.

My experience includes nine years in Marine Biological Research with the New Jersey Agricultural Experiment Station at Rutgers University; past President of the Oyster Institute of North America; a member of Governor Dempsey's Clean Water Task Force; and, at present Chairman of the Connecticut Shellfish Commission and a Trustee of the Madison, Connecticut Land Conservation Trust.

I am in favor of this bill, particularly of Section 12 which states, "No person may conduct any dredging, filling, or excavation work within any estuary of the United States or in the Great Lakes and connecting waterways unless a permit for such work is issued by the Secretary of the Interior, in addition to any other permit that may be required for such work."

Oysters, clams, and bay scallops are brackish water animals, living and breeding in estuaries where fresh water from streams and rivers meet the seas' tides. Damage to Connecticut estuaries from unregulated dredging, filling of adjoining marshes and from stream pollution has been extensive.

Quoting from a report prepared for the Connecticut Inter-regional Planning Program, Shellfish Resources, by Mr. Ernest J. Bontya, Engineer of Shellfisheries of Connecticut:

"The estuaries and coastal wetlands of Connecticut form a complex ecological system contributing to a wide variety of fish and wildlife. The shellfisheries, as a part of such a complex, are in even more delicate balance in the

Introduction

Our coastal cities in retrospect!

There were countless brooks in our cities! These brooks still flow but now underneath the concrete veneer of the city, inside large diameter pipes, as part of the city sewage system. What was once a marshland or woodland is now closed ranks of steel and glass (Hay and Farb, 1966).

Day by day we are laying asphalt for highways, building homes and factories on our ever diminishing productive marshlands and farmlands. Day by day we are spilling countless tons of toxic substances into our rivers and estuaries while bulldozers indiscriminately fill in existing salt marshes. Each year the metropolitan areas depend on more remote locations for their marine resources or water supplies. Sparsely populated regions of our coastline have also developed symptons of deterioration as found in the city. Salt marshes are becoming gray depositories of trash, sewage and oily wastes often accompanied in the summer by the hovering, lingering smell os indiscriminate usage of residual toxic pesticides and herbicides. The sight of dead birds with feathers stained by jettisoned oil, or the clean wave-washed beach sands besmirched by tar, are all signs of a deteriorating salt marsh. The smear on a man's skin can be washed off. The smear on the environment cannot be so easily disposed of. Man cannot afford to continue his concentration on himself to the exclusion of every other form of life. The web of life--the delicate balance of man with nature is at stake.

The Extent of the Estuarine Environment

Our estuarine areas and wetlands are important not only for aesthetic reasons but also for specific scientic, economic, and social reasons. Marshlands are sponges which provide free of charge a place for water to purify and to be stored for future use. Estuarine marshlands provide a method of flood control which is more efficient and less expensive than any other method yet devised by man. Scientific evidence reveals that estuarine areas provide nursery grounds for numerous fin fish and shell fish. Estuaries provide bait and countless coves for protection of our wild fowl. Robert Cushman Murphy (1964), among other, feel that they are irreplaceable. Undeveloped wetlands, whether government property, a nature sanctuary or a Boy Scout reservation adds to the value of adjacent private property increasing the net value of the entire community as well as providing space for peaceful contemplation and recreation.

The destruction of the marshland and estuarine environment will disrupt the food chain. Approximately 10,000 pounds of phytoplankton, the floating plants of the estuaries are needed to produce 1000 pounds of minute crustaceans. They in turn are fed on by smelt, which in turn is fed on by mackeral, which in turn is fed on by tuna. "Thus the path that leads from the primary producers of energy (the countless billions of diatoms) to the final consumer (the human being) shows the ultimate survival of only a tenth of a pound out of the original resource at the beginning of the chain of 10,000 pounds" (Hay and Farb, 1966). If every citizen in New York City were to remove one can of tuna fish from the supermarket shelves one day a week think back to how many countless diatoms and crustaceans our estuarine dependent sea resources must produce!

Our estuarine dependent sea resources help to feed an expanding population with a dwindling food surplus. The commercial fishing industry and the shellfishing industry in Long Island is worth 12 million dollars a year. The sport fishing industry is worth 125 million dollars per annum to Long Island alone." It is a source of employment for thousands of men and is a self perpetuating anti-poverty program that does not come out of your pocket or mine." (Charles Belt - personal communication 1965)

Marshlands are often more productive than our best farmlands. Yet these coastal factories use no electricity, are not subject to real estate texes or union labor and wages or Article 14 of the Taft Hartley Law. These coastal factories produce every twenty four hours throughout the year. Can we afford to allow their decline? Of Long Islands, 400,000 submerged acres suitable for the cultivation and propagation of shellfish, approximately 170,000 have already been destroyed by pollution, filling, or ill advised and indiscriminate dredging.

In 1964 there was a proposal to dredge Shinnecock Bay, 9,000 feet long and 600 feet wide. (Incidentally this is almost wide enough for the Queen Mary to turn around.) The Marine Resources Committee of Long Island showed that dredging would destroy 90 acres of very valuable shellfish grounds. Estimates of yield at $1,000 per acre, per annum is a conservative estimate with no need for fertilizers, pesticides, or artificial irrigation. Over a twenty year period just one acre is worth $25,000 considering 4% interest.

Recommendation of Support

1. We would like to indicate our total support of H.B. #25 - particularly because it is the first time the Federal Government recognizes the uniqueness and value of the estuarine system.
2. Exeptionally important to the success and implementation of the bill are:

Section 2.	Provision for this nation to take inventory of its present nonrenewable resource in estuarine areas from scientific, economic, and sociological aspects before any drastic development action is taken.
Section 5.	Present federal lands now obsolete for their original intended purpose may have their jurisdiction transferred to the Secretary of the Interior.
Section 6.	The Secretary of the Interior must have regulatory powers to protect the investment in this bill.
Section 8 and 12.	The Secretary of the Interior, who has responsibility for the total picture of many kinds of resources, is responsible for issuing development permits.

3. Although we are strongly in favor of this Bill and would support its enactment in total, we would respectfully offer the following comments:

a. A more inclusive definition of the estuary as cited in Section 13 might be considered to include many of New York's estuaries. An estuary is usually defined as a semi enclosed body of water partly cut off from the ocean by land masses. A region of steep and variable gradients where fresh water by rivers or underground seepage measurably dilutes sea water. Several estuaries on Long Island at this time or in the immediate past have not had an "unimpaired natural connection with the open sea", yet they are still estuaries except for the fact that the inlets are opened or closed by hurricanes, violent storms or as the result of man's activities. An unimpaired natural connection with the sea would exclude many of the salt ponds in Massachusetts and Rhode Island because they are only periodically open to the sea.

b. Because of the considerable importance of coastal wetlands for primary productivity and the subsequent dependence of shellfish, finfish, and waterfowl on their products as well as the capacity of that peat and muck substrata with its attendant vegetation to absorb tidal flooding the salt marshes and coastal wetlands of the transitional areas should be defined, perhaps in a manner similar to H 1643 P. L. 1965 of the Rhode Island General Assembly, by the characteristic vegetation as well as tidal influence.

Summary

Long ago Ducks Unlimited recognized the value of wetlands and focused their efforts on the accumulation of marshlands.

Their efforts have been rewarding enough that they continue to invest private capital in that project. Can the nation affort not to treat the estuarine environment with any less seriousness?

Conservation is no longer a religious fervor that needs missionaries and converts, but a science that includes economics, sociology, business and aesthetics as well as all of the traditional sciences. House Bill 25 is a recognition of this fact and provides for the study before development, enjoyment and preservation, and multiple use of the sport and commercial potential of our valuable estuarine resource.

Respectfully submitted,

J. D. Barton, Jr.   J. R. Welker   H. W. Moeller, Jr.

Bibliography

Hay, John and Peter Farb, 1966. The Atlantic Shore. Harper and Row, New York. 246 p.

Murphy, Robert Cushman 1964. Fish Shaped Paumanok. American Philosophical Society. 67 p.

Rhode Island

MARSHLAND ZONING

H 1643 Substitute "B" Chapter 140 - P. L. 1965
Approved May 19, 1965

JANUARY SESSION, A. D. 1965

"2-1-14. Definitions. -- A coastal wetland shall mean any salt marsh bordering on the tidal waters of this state, whether or not the tide waters reach the littoral areas through natural or artificial water courses, and such uplands contiguous thereto, but extending no more than fifty (50) yards inland therefrom, as the director shall deem reasonably necessary to protect such salt marshes for the purposes set forth in section 2-1-13. Salt marshes shall include those areas upon which grow some, but not necessarily all of the following: Salt meadow grass (*Spartina patens*), spike grass (*Distichlis spicata*), black grass (*Juncus gerardi*), saltmarsh grass (*Spartina alterniflora*), saltworts (*Salicornia europaea*, and *Salicornia biglovii*), sea lavender (*Limonium carolinianum* saltmarsh bulrushes (*Scirpus robustus*, and *Scirpus paludosus* var. *atlanticus*), sand spurrey (*Spergularia marina*), switch grass (*Panicum virgatum*), tall cordgrass (*Spartina pectinata*), high-tide bush (*Iva frutescens* var. *oraria*), cattails (*Typha angustifolia*, and *Typha latifolia*), spike rush (*Eleocharis rostellata*), chairmaker's rush (*Scirpus americana*), bent grass (*Agrostis palustris*), and sweet grass (*Hierochloe odorata*). The occurence and extent of saltmarsh peat at the undisturbed surface shall be construed to be true evidence of the extent of a salt marsh or a part thereof."

FRANK J. BRASCO
11TH DISTRICT, NEW YORK

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18 July 1968

Mr. John S. Farlow
Regional Estuarine Program Coordinator
Northeast Regional Office
Federal Water Pollution Control Administration
U.S. Department of the Interior
North Atlantic Water Quality Management Center
Edison, New Jersey 08840

Dear Mr. Farlow:

I have Mr. L. E. De Camp's letter of July 8th advising me of the public meeting to be held July 23rd and 24th in connection with the National Estuarine Pollution Study.

The press of legislative business will make it necessary for me to remain in Washington on those dates and I regret, therefore, it will not be possible for me to attend the meetings.

Enclosed is a statement indicating my support of the Study, and I will be thankful if you will have it made part of the record of the proceedings.

With kindest wishes, I am

Sincerely yours,

Frank J Brasco
FRANK J. BRASCO

FJB:h
Enclosure

I wish to express my thanks for the opportunity to present this statement in support of the National Estuarine Pollution Study.

At a time when the wastes of our increasingly affluent society and our growing population threaten to literally engulf us, such a study is not merely commendable, but rather a necessity.

We have come haltingly to an appreciation of the importance of estuaries, having once looked upon these fertile areas as wasteland. The author, Wesley Marx recently wrote:

> While the ocean regime may appear to halt at the shore in the crescendo of surf, its vital processes infiltrate quielty into our bays, sloughs, inlets, sounds, salt marshes and lagoons. These rambling coastal niches, where salt water meets the sweet water of land, are called estuaries. While some estuaries, such as the glaciated fjords of Alaska--are on the grand form, most are sprawling mazes clogged with marsh grass, crisscrossed by channels and bottomed with mud. Yet these rather mundane-appearing places must rank with our forests and our rivers as indispensable natural resources. Neither of the latter two can come close to matching the life-giving capacity of the estuary.
>
> This capacity springs from the surprisingly calm collision of sea and land forces that characterize an estuary. Here ocean tides and river currents circulate enriching nutrients. An estuary is nature's grand nutrient trap. The shallow, sprawling nature of the estuary provides maximumum exposure to energy-giving sunlight. Amidst these optimum conditions, the rooted plants of the land and the drifting plants of the sea (plankton) combine in a virtual explosion of organic productivity.

While I claim no expertise in biology or ecology, I do appreciate the importance of estuaries as described by the experts. Further, as a result of this appreciation I shall look forward to receiving and reviewing the results of this nationwide study when they are submitted to the Congress late next year. I am hopeful that the Federal Water Pollution Control Administration will at that time present legislative recommendations which the Congress may implement speedily so as to ensure the protection of our remaining estuaries.

FROM THE OFFICE OF
Frank J. Brasco
11TH CONGRESSIONAL DISTRICT
BROOKLYN, NEW YORK

Town of Huntington

LONG ISLAND NEW YORK

CONSERVATION COUNCIL

Jack Combes Chairman
William Mc Aneny Vice Chairman
Jacqueline Binnian
Larry Colangelo
George Hren
Jacqueline Ingham
William Perry
Fred Schieferstein

CLAYTON F. MUGRIDGE
Councilman

July 21, 1968

Mr. John S. Farlow, Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Mr. Farlow:

Members of the Huntington Conservation Advisory Council will be unable to attend the public meeting on the Impact Of Pollution On Our Coastal Waters scheduled for July 23 in New York City, so we are submitting the following statements for the record.

As a Council, we are concerned specifically with abatement of pollution in Town of Huntington Waters, but as individuals and conservationists, we are concerned with the abatement of pollution of all estuarine and coastal waters.

Since our Council was formed, as an official advisory body to the Huntington Town Board approximately two years ago, we have been trying to correct a situation wherein several restaurants have been polluting with raw sewage, what is known as the Centerport Mill Pond, through the overflow of their defective sewage disposal systems. This has caused the closing of this brackish pond to the taking of shellfish and swimming, has developed odors objectionable to the residents and in general has been dangerous to the health of the community. We have received excellent cooperation from the New York State Conservation Department (up to the limit of its authority), but little from the Suffolk County Health Department. Although they have authority to close these restaurants until the situation is corrected, they have not seen fit to do so. Gradually, the Town Authorities are forcing the restaurants to correct the situation, but it would have been far easier and faster for the Health Department to do it. It seems apparent to us that Federal or other authority is needed to permit conservation oriented bodies such as the New York State Conservation Department, the local Town Authorities, or others, to take action when the Health Department seems unable or unwilling to.

The Council also feels that laws should be enacted providing stringent penalties for polluting estuarine and coastal

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waters either deliberately or accidentally with crude oil or petroleum products, or any other chemical pollutants for that matter, and procedures should be required of all tanker operators similar to those described in advertisements of a major oil company that prevent pollution by pumping water ballast and the bilges of oil tankers.

Very truly yours,

J. J. Combes ee

J. J. Combes, Chairman
Huntington Conservation Advisory Council

JJC:ee

THE SENATE
STATE OF NEW YORK
ALBANY

WHITNEY NORTH SEYMOUR, JR.
26TH DISTRICT
CHAIRMAN
COMMITTEE ON HOUSING

July 24, 1968

Mr. John S. Farlow
Regional Coordinator, National Estuarine Pollution Study
North Atlantic Quality Management Center
Edison, New Jersey 08817

Dear Mr. Farlow,

On behalf of Senator Whitney North Seymour, Jr. I am forwarding to you a copy of an act which he introduced in the past state legislature. This bill was passed by both houses. In addition, I am sending you a memorandum which I prepared for the senator on the subject of wetlands and waterways.

Would you be so kind as to incorporate what is relevant in this material into the minutes of the July 23 hearing? Unfortunately I was out of town and could not attend.

I am also forwarding to you under separate cover a rough draft of a report on the present status of Jamaica Bay planning. This report is the outcome of a conference on Jamaica Bay which was sponsored by the Park Association of New York City and chaired by Senator Seymour last May 28.

I hope that these materials will be helpful. Please let me know if I can be of further assistance.

Sincerely yours,

Elizabeth B. Barlow

Mrs. Edward L. Barlow
Legislative Assistant

75 East End Avenue
New York, N.Y. 10028

STATE OF NEW YORK

3973—A

IN SENATE

February 20, 1968

Introduced by Messrs. SEYMOUR, B. C. SMITH—read twice and ordered printed, and when printed to be committed to the Committee on Conservation and Recreation—committee discharged, bill amended, ordered reprinted as amended and recommitted to said committee

AN ACT

To amend the conservation law, in relation to preserving ecologically significant natural areas

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section 3-0111 of the conservation law is hereby amended by adding thereto a new subdivision, to be subdivision sixteen, to read as follows:

16..Acquire in the name of the people of the state, by gift, purchase or appropriation, parcels of land, both above and below water for the purpose of preserving ecologically significant natural areas and biologic natural features. Parcels of land acquired for such purpose may include rivers, streams, tidal flats, salt or pure water marshes, bogs, estuarine areas, swamps, woodlands, wetlands, and

Explanation — Matter in *italics* is new; matter in brackets [ ] is old law to be omitted.

From the office of
Whitney North Seymour, Jr.
State Senator (R), Manhattan

CONSERVATION MEASURES PENDING IN THE 1968 SESSION OF THE STATE LEGISLATURE

As people have come to realize that the Eastern Seaboard will soon be transformed into a giant Megalopolis with clusters of metropolitan urban centers sprawling from Boston to Washington and satellite cities spreading tentacles across the open land, they have become acutely conscious of the need to preserve our natural resources and to make provision for recreational demands of the future. Popular support for conservation planning has expressed itself in the overwhelming voter approval in New York State of bond issues for water pollution control in 1965 and for recreation programming in 1966.

The Outdoor Recreation Resource Review Commission, headed by Laurance Rockefeller, in its 1962 report to the President sounded the keynote for a national program to plan for the protection and enjoyment of the outdoors, including recreational facilities, preservation of natural areas, and development of park resources to serve metropolitan centers. Among the findings of the ORRRC were that the simple activities such as walking, swimming and picnicing, were the ones most popular with Americans; that outdoor opportunities are most urgently needed for metropolitan areas; and that better planning is required to develop full enjoyment of outdoor facilities.

New York State is now engaged in the implementation of an ambitious program of outdoor recreation. Although we are making some giant strides, the overall plan suffers from some defects such as lack of physical continuity, over-emphasis on "equipment" recreation, lack of program planning for recreation and conservation, and an inadequate attention to problems access and transportation.

In addition to the need for more extensive conservation planning in the State program, there is also the need for conserving the resources we already have. Too little attention has been paid to the problems of refuse and litter control, to the protection of rights-of-way for hikers over open lands, and to the protection of natural areas against encroachment. The following bills to help meet these needs are currently pending in the 1968 Session of the State Legislature.

COUNCIL ON TRAILS AND BIKEWAYS (S. 3972-Seymour, B.C. Smith; A.5769-Waryas)

This bi-partisan measure proposes the establishment of a state-wide system of trails and bikeways to be planned by a newly created "Council on Trails and Bikeways," comprising the chairmen of the various state park commissions throughout the state. The Council would plan the development of facilities for hikers, cyclists and horseback riders, with particular emphasis on trails near metropolitan centers. One of the objectives of the measure is to acquire rights-of-way while open land is still available and before the prices become prohibitive. The ORRRC has predicted that hiking will increase 368% between now and the year 2000. 30% of the nation's population already participate in bicycle riding and it is projected that by 1975 ten million bicycles will be sold each year.

WILD STREAMS AND WETLANDS (S. 3973-Seymour, B.C. Smith; A. 5767-Waryas)

The objective of this proposal is to empower the Conservation Department to acquire ecologically significant natural areas before they are completely destroyed by "civilization". Unlike existing acquisition programs, this measure does not contemplate the development of specific recreation programs. It is available for state-wide application.

PROTECTING THE APPALACHIAN TRAIL (S. 3971-Seymour, B.C. Smith; A. 5768-Waryas)

The Appalachian Trail stretches 2,000 miles from Maine to Georgia and provides spectacular views, intimate contacts with nature, and a variety of experience for thousand of outdoor enthusiasts. The Trail passes through fourteen states and over lands in Federal (34%), State (23%), and private (43%) ownership. Surging population has caused severe inroads on the Trail, especially in the private sector. In the New York-New Jersey section of the Trail, 65 miles out of the total stretch of 159 miles in private ownership. This bill, following a recommendation of the Bureau of Outdoor Recreation of the Department of

Interior, would authorize the State to acquire title or easement to sections of the Trail in private ownership whenever necessary to protect its continuity.

APPALACHIAN HIGHLANDS PRESERVE (S. 4987-Seymour, Stafford)

The Regional Planning Association has recommended a 10,000 square mile Appalachian park system to provide for the future outdoor recreation, ecological and educational needs of the Eastern Seaboard. This measure is designed to implement that recommendation through the creation of an interstate compact between the states of Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Virginia and West Virginia. Under the compact, a preserve would be established to insure planning control over the future development of the Highlands of the Appalachian Mountains, in some ways similar to the "Blue Line" that now protects the Catskills and Adirondacks. It is contemplated that all levels of government and private property owners would work together to develop sound land use compatible with the preservation of this magnificent natural resource.

ANTI-LITTER PROGRAM (S. 3467-Seymour)

This measure (designed to implement suggestions in an article by the sponsor published in the March 1968 issue of "The Conservationist") would require that a cash deposit be paid by distributors to the State on all food and beverage containers. The deposit would be refunded to the distributor if the bottles and cans were reclaimed or disposed of, and would otherwise be applied toward the expenses of refuse disposal by government agencies. Experience in other parts of the country has demonstrated the feasibility of reclaiming discarded bottles and cans, and this measure is designed to stimulate a similar result here. The State Department of Transportation estimates that it spends more than two million dollars a year to clear litter from state highways alone.

CONSERVATION PATROL (S. 3254-Seymour)

This measure would establish a Conservation Patrol to provide additional seasonal personnel to clear bottles, cans and other refuse from forest and park lands, historic sites, beaches, recreation areas, water resources, and highway rights-of-way. Primary emphasis would be placed on hiring young people for summer employment.

CONSERVATION BILL OF RIGHTS (S. 2213-Seymour; A. 5123-Dowd)

This Resolution is designed to preserve the widely-hailed Conservation Bill of Rights approved by the 1967 Constitutional Convention but lost because of the defeat of the entire document at the polls. Among its provisions are abatement of air and water pollution and unnecessary noise, protection of agricultural lands, wetlands and shorelines and acquisition of lands and waters of natural beauty, wilderness character or historical significance.

PRESERVATION OF SCENIC WATERWAYS AND WETLANDS

Wild waters run deep in the American consciousness: Thoreau's Walden and Mark Twain's Mississippi represent man's interaction with the vast beauties of a wilderness continent as do the paintings of George Caleb Bingham, Winslow Homer and the Hudson River School. New York is particularly favored with spectacularly scenic waters: the awesome grandeur of Niagra Falls is a national tourist attraction; the Finger Lakes provide fjord-like scenery; and the sandy shores of Long Island form one of the most magnificent stretches of beach anywhere in the world. In addition, New York has its Hudson, the Great Lakes and St. Lawrence Seaway, the historic Barge Canal system embracing forty per cent of the state's waters, a myriad of quiet mountain lakes in the Adirondaks, Lake Champlian and Long Island Sound. Altogether New York has 70,000 miles of streams and 3.5 million acres of lakes and ponds and 500,000 acres of wetlands[1]--a seemingly unlimited natural endowment.

There are, however, many competing and conflicting demands both for water resources and waterfront land. As waterborne commerce flourished in the nineteenth century factories and towns sprang up along the state's waterways which often produced a blighting effect on the landscape and a polluting effect on the water. As human settlements grew so did sanitation problems. Many species of fish and shellfish were extinguished as untreated human and industrial wastes were discharged into the rivers and streams of the state. Rapid population expansion accelerated shoreline despoilage and water contamination in the twentieth century. Commercial fishing in the Port of New York ceased altogether. As urban centers grew and land became scarce wet~~g~~lands were filled in to provide new land for factories, homes and highways or to be used as convenient repositories for the growing volume of urban garbage.[2] ¶ Demands for water and waterfront property will intensify even more in the years ahead as the state's population grows from its present 18 million to 28 million by the year 2000. Water demands for industry and agriculture, for hydroelectric power and waste disposal, for domestic consumption and recreation will grow from a present demand for 20 billion gallons daily to a demand for over 30 billion gallons daily. Fortunately, New York has enough water resources to satisfy the demands imposed by population expansion and economic growth. It can also meet the demands of its people--demands generated by increased leisure, mobility and affluence--for scenic and recreational opportunities.

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[1] Wetlands are particularly vulnerable to exploitation; this figure represents one half of an original one million acres. Of these 150,000 are considered of high to medium quality for wildlife.

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[2] In Bronx County today only 50 acres remain of an original 5000 acre salt marsh and these now are threatened by the New York City Department of Sanitation which is ever-searching for additional low-lying lands for garbage disposal sites.

However, all of these objectives can be met only if wisdom and foresight are embodied in a rational plan for development. A major element of such a plan would be a network of water-related open spaces. The time to set aside these open spaces is now. A bill designed to preserve our state's wetlands and scenic waterways is particularly timely and will result in manifold future benefits to New York residents.

Economic Benefits

Fishing Industry. The retail value of the annual shellfish harvest on Long Island is $5,5000,000 and the finfish harvest averages between$3,350,000 and $3,500,000 a year.

The size of the fish and shellfish harvests is directly dependent upon the amount of natural wetlands in existence. This can be explained by studying the ecology of a salt marsh. Each salt marsh represents an eco-system. Marsh plants decay releasing detrius (particles of organic matter) and essential nutrient salts (nitrates and phosphates) into the surrounding waters. Detrius provides nourishment for shellfish as well as a variety of mollusks, crustaceans and worms. Nitrates and phosphates nourish a number of plants and organisms including phytoplankton, a basic food substance for fish. Thus, both shellfish and fish are directly dependent upon the natural food factory of the salt marsh.

New York's marsh lands are disappearing at an alarming rate. On Long Island over 1000 acres of marsh land are destroyed every year. Efforts are being made by the state to assist Long Island municipalities in acquiring their wetlands under the Long Island Wetlands Bill of April 20, 1959. Increased acquisition of wetlands for natural preserves under the present bill will undoubtedly be of great benefit to the fishing industry of the state.

Recreation Industry. The popularity of sport fishing is attested to by the fact that in New York in 1962-63 over 700,000 fishing licenses of all kinds were issued; in addition, an estimated 250,000 youngsters under age sixteen fish without a license.

Boating on state waters is extremely popular. Motor boat registrations in 1964 totaled 350,000, and the Division of Motor Boats estimates that there are more than half a million motor boats in the state and that the rate of increase is about twelve per cent annually. Preservation of wetlands and certain stretches of natural rivers will protect the interests of the sportsmen of the state and in so doing will boost sales of many kinds of sporting equipment.

Tourist Industry. Since early transportation routes were primarily water-based, New York's original settlements followed its river valleys and coastline. For this reason many sites of historical interest are water-oriented. While the economic factors of tourism are hard to measure the preservation of historical waterfront landmarks together with natural waterfront scenery and recreation opportunities will undoubtedly provide a strong stimulus to the tourist industry.

Flood Control. Many millions of dollars have been lost in the past through flood devastation. Estuarine wetlands are natural flood plains that perform their function of absorbing and holding water without one cent of public cost. Filling and building upon these areas is often a foolish form of capital investment, whereas leaving them open may prevent future loss through destruction and eliminate the need for costly protective engineering.

Sociological Benefits.

Educational. Wetlands and waterways provide extraordinarily valuable laboratories for wildlife education. The Long Island wetlands in particular are extremely rich in bird life as they lie along the Atlantic Flyway and attract numerous species of migratory birds. They are also havens for wintering waterfowl.[3] The wetlands along the Barge Canal from Palmyra east to Rome is another prime area for waterfowl. Upland streams and their surrounding woodlands provide ~~another~~ a different type of ecological experience. As urban children have increasingly less opportunity for immediate contact with the natural world, special opportunities for such contact must be provided for them.

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[3] Nearly 180,000 wintering waterfowl have been counted in a single day on Long Island.

Recreational. National studies have demonstrated conclusively that water-based recreation is preferred above all other types. Swimming, boating, canoeing, snorkeling, and water-skiing are enlisting a growing numbers of enthusiasts. In addition, acquisition of linear avenues of waterfront land will provide opportunities for trail location to meet the demands of hikers, cyclists and equestrians.

Aesthetic. Finally, the sight of water is refreshing to the human spirit. It provides visual open space, a sense of nature's powerful rhythms, and a continuity with places unseen. Ensuring the beauties of our waterfront landscape for the next generation is not a trivial goal. For an increasingly urban society it has become increasingly important to set aside special places--unique places in nature--places to learn and think and grow and dream.

Elizabeth BArlow

FOCUS

Federation Of Conservationists, United Societies

September 3, 1968

Mr. John S Farlow,
Regional Coordinator, National Estuarine Pollution Study,
North Atlantic Water Quality Management Center
Edison, New Jersey, 08817.

Dear Mr. Farlow:

We are pleased to submit for registration and as part of the record, statement on estuarine pollution and marshlands losses in the Middle Atlantic region, with particular reference to the Barnegat Bay area of Southern New Jersey.

We are sorry that we are late in filing this report, but it required considerable research which was only recently completed. We trust you will find this report helpful in your studies.

Yours very truly,

FOCUS Robert B Litch
Per Robert B. Litch,
Executive Secretary

FOCUS POST OFFICE BOX 25, BARNEGAT LIGHT, NEW JERSEY 08006

COASTAL MARSHLANDS AND ESTUARIES:

an inquiry.

**

Prepared By

Peter H. Johnson
FOCUS
Federation of Conservationists, United Societies.

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Submitted To
the

Federal Water Pollution Control Administration

of the

United States Department of the Interior.

**

JULY, 1968.

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INTRODUCTION

Gentlemen:

This report is our response to your call for information whereby a complete picture of the present situation concerning the marshlands and estuaries of our Middle Atlantic Coast is to be obtained. The material contained herein brings together information on a local level with information from other, more general sources, inasmuch as literature on the effects of man's presence upon the ecosystem of Barnegat Bay is practically nonexistent.

We recognize that regional planning for our coasts demands full cognizance of the long-term effects of any such activity upon the region itself. We are of the opinion that there is at present not much untouched marshland in our area and that the increasing tempo of suburban expansion in this region is a stark threat to the ecological future of the region, with long-term results that can only be deleterious, ultimately, for all concerned.

We are well aware that the only real solution to these problems is the establishment of a balance between the economic interests in the region and the future of the region itself. A program will have to be evolved which can provide for sound, well-planned development on the one hand, and for the continued usability of this region for aesthetic, recreational and other such uses--which involves, first and foremost, the protection of marshes, estuaries, bays and beaches from carelessness and greed.

To these ends we offer this Report in the sincere hope that it may serve a useful purpose.

For the Federation:

Johnson

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Some Definitions

"An estuary has been defined as a body of water in which river water mixes with and measurably dilutes sea-water. It has also been described as the wide mouth of a river or arm of the sea where the tide meets the river currents, or flows and ebbs."

--G.K. REID:
Ecology of Inland Waters and Estuaries.

"(Marshlands) comprise areas of land bordering on the sea, more or less covered with vegetation, and subject to periodic inundation by the tide. They originate as bare mud-or sand-flats which, as they become higher, are colonized by algae and flowering plants...The plants are enabled to occupy this habitat by virtue of their tolerance of the special conditions occurring in salt marshes. Salt marshes...may extend vertically from about mean sea-level up to the extreme upper limit of the tides."

--V.J. CHAPMAN:
Salt Marshes and Salt Deserts of the World.

Values of Estuaries and Marshlands

An examination of our definitions shows that marshlands and estuaries are intimately associated with each other, with few exceptions (e.g. fjords, young river-mouths, etc.). The eastern coast of the United States possesses several different types of marsh, the distinctions between them being dependent upon the geology of the area and on the type of vegetation present. Many of these areas are associated with a river outlet or a bay into which a river delivers its flow.

I. Fisheries -- Unbeknownst to most people, this environment, with its constant exposure to the sea and regular inundation by the tides, represents a vast sanctuary to marine life which is of no mean value economically. According to one report,[1]

> "So much lives and grows and breeds in our tidelands that more than half of the saltwater fish and shellfish that we take are called 'estuarine dependent,' which means that they either spawn or hatch here, or spend some vital stage of their lives here, or feed upon the life that flows from here out over our Continental Shelf, where 90 percent of our offshore seafoods are harvested. Thus, tidelands represent the livelihood of about 100,000 American fishermen whose three-billion-pound catch paid them $250 million in 1965."

This is one of the greatest points for the most careful utilization of our estuarine assets.

II. Natural Shore Protection-- Marshes are the result of thousands of years of sedimentation, the accumulation of countless cubic yards of soil and silt which have been brought down from higher ground by erosion via streams and rivers. Where offshore barrier beaches have formed as the result of ocean currents and wave action, the resulting inshore embayments become gradually filled with sand and mud. As plants colonize these flats, the upper surface becomes stabilized by their millions of interwoven roots. These plants form vast areas of vegetation which help to catch and hold yet more debris brought in by the tides; erosion of the marsh is retarded because the plants hold the soil particles; and the plants themselves contribute, upon their deaths, substantial quantities of organic material. The resulting accumulation of mud and organic debris from centuries of growth results in a tough, resilient buffer zone between the land and the ocean. Thus, in those areas endowed with marshlands, we are provided with natural protection against storms and other agents of shoreline erosion.

III. Waterfowl and Hunting-- The association which most frequently comes to mind in connection with marshlands is the familiar vignette of a dawn sky, the hunter crouching in his blind, and ducks flying overhead. Marshlands form a considerable part of the land area of Federal and State-owned wildlife refuges and shooting-grounds. A much larger acreage is under private ownership but is still more or less open to sportsmen. The number of people involved in hunting ducks, geese and other waterfowl is huge--and so is the amount of money they spend for license and other fees, which can be added to the fishery earnings on the positive side of the economic picture. Aside from this, there is the fact that marshlands provide the breeding-grounds and food for the waterfowl themselves, and are thus even more important.

The Shoreline--Insult and Injury

I. The Waterfront Lot and the Lot of the Waterfront.

The vital, ecologically strategic position occupied by our marshlands is in jeopardy as they become the victims of the same pollution problems which plague the rest of the country. Thousands of acres of marsh have been or are yet being sacrificed to land developers for the construction of cheap housing "on the shore."

> "Despite the land developer's assurance, the possibility that new marshes may develop cannot, of course, be used as an excuse for the indiscriminate filling in of existing marshes, or of flats, coves and bays...The salt marsh...is unique and cannot be replaced, in the way that an inland area, completely denuded of its forests, can be replanted with trees... the inroads made on them by 'urban sprawl' have been very great...Connecticut, for example, has already lost half of its useful tidal marshes, and in other states the measures taken to protect them have often been too little and too late, or they have been successfully by-passed and ignored... The urgencies of population have become so extreme in some regions that a marsh is considered a luxury the community cannot afford. In others, a salt marsh is merely another potential section of land out of which development money can be made." 2

The filling-in or covering of a marsh by dredging, land-fill or other methods effectively smothers it. All of the intricate life processes which normally take place in a marsh must cease. Underneath the deceptively firm mantle of gravel must now lie a sump of rot and decomposition which saps the inherent strength of the once-living mud base. Plants no longer live to hold the soil together; its stability is thus largely lost. This does not become readily apparent until, for example, a man-made bulkhead or seawall gives way to the waters, exposing the reclaimed land to erosion. Instead of a live matrix of plants, roots and sediment to resist the action of the current, there is now only a weak layer of old mud, usually black with the sulfides of decomposition, with all of the old framework of plants having long since rotted away. The land is thus easily eroded away, sometimes carrying a few houses with it. An example of this occurred at Tuckerton, N.J. several years ago, where, in a housing development, lagoons had been dug, the surrounding land covered with gravel and a house built on an individual concrete slab. The lagoon had not yet been bulkheaded. The mud upon which these houses stood had been weakened, and several of the houses were toppled into the lagoon, slab and all.

For years, houses which were to stand on this tidal marsh had been placed upon pilings for stability. No fill was used at all; the marsh was viable even directly underneath the dwelling itself. With the advent of mass housing and land development practices it was found cheapest to dredge the bottoms of adjacent creeks and bays up onto the marsh and to build upon this new base of "reclaimed" land. An almost universal practice was to ignore the construction of underpinning of any sort for each dwelling, save perhaps for a short foundation wall. No piling was used except to hold up the sides of the "lagoons" which were to serve each "waterfront lot." In March of 1962 a great storm coupled with abnormally high tides swamped many and many a budding seaside development. Many homeowners have now paid additional money to have their homes placed more safely...on pilings. But to set pilings for each individual unit is an expense few development concerns care to bother with; it is a safe bet that a building code requiring such piling-work for each unit would have greatly retarded the phenomenal spread of the housing industry out onto our coastal marshlands. No such law exists at present, as far as is known, and as a result thousands of acres of our dwindling marshes are being smothered by the dredge.

Where these communities meet the water there is open war between our domination of the land and the ecological system which must strive to remain viable despite our attempts to hold it in check or cancel it out. Lagoons are merely a design concept which allows each homeowner to moor his boat at his back door, an innovation designed to provide everyone, not just those fortunate few whose homes lie close to the actual water's edge, with the "enjoyments of seashore living." They serve, in fact, as canals for the channeling of boats to and from the open waters--and for the channeling of trash, road washings, oil, gasoline, and sewage into an area along the shore much larger than that covered by the reclaimed land itself. These lagoons are a health hazard, especially where the channel system is so intricate as to minimize the flushing action of tidal flow. If one desires to swim in them, he must often share the water with all sorts of floating debris. It is forbidden by law in the State of New Jersey to sell shellfish or other marine productions harvested in these lagoons, and, in most cases, from the feeder channels into which the lagoons open.
In some cases the zone extends for some distance from the mouths of such channels and adjacent bays and coves (See enclosed map).

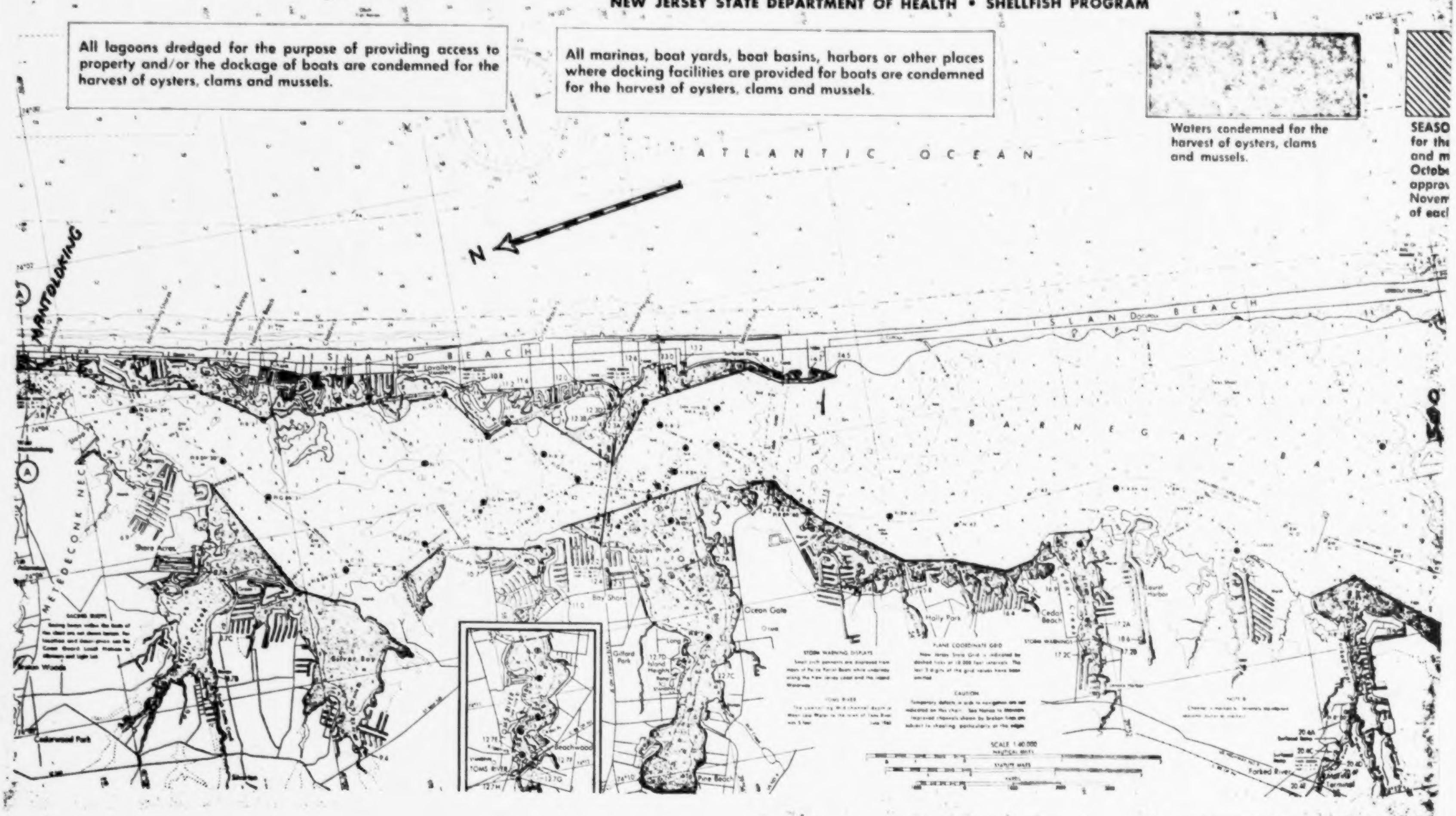
II. Salt-water Bathing and Health.

Within the estuarine domain are many public bathing-beaches. Many of these have been built as part of housing projects which dot the New Jersey coast in profusion. These serve thousands of people yearly; many are exposed to the danger of contracting disease from polluted water. It might be noted, also, that this is an ever-present threat to those who bathe in their lagoons. However, as far as the writer could ascertain, no conclusive evidence

AREAS SHOWN AS OF
OCT. 1966

CONDEMNED AREA CHART 3

NEW JERSEY STATE DEPARTMENT OF HEALTH • SHELLFISH PROGRAM



All lagoons dredged for the purpose of providing access to property and/or the dockage of boats are condemned for the harvest of oysters, clams and mussels.

All marinas, boat yards, boat basins, harbors or other places where docking facilities are provided for boats are condemned for the harvest of oysters, clams and mussels.

Waters condemned for the harvest of oysters, clams and mussels.

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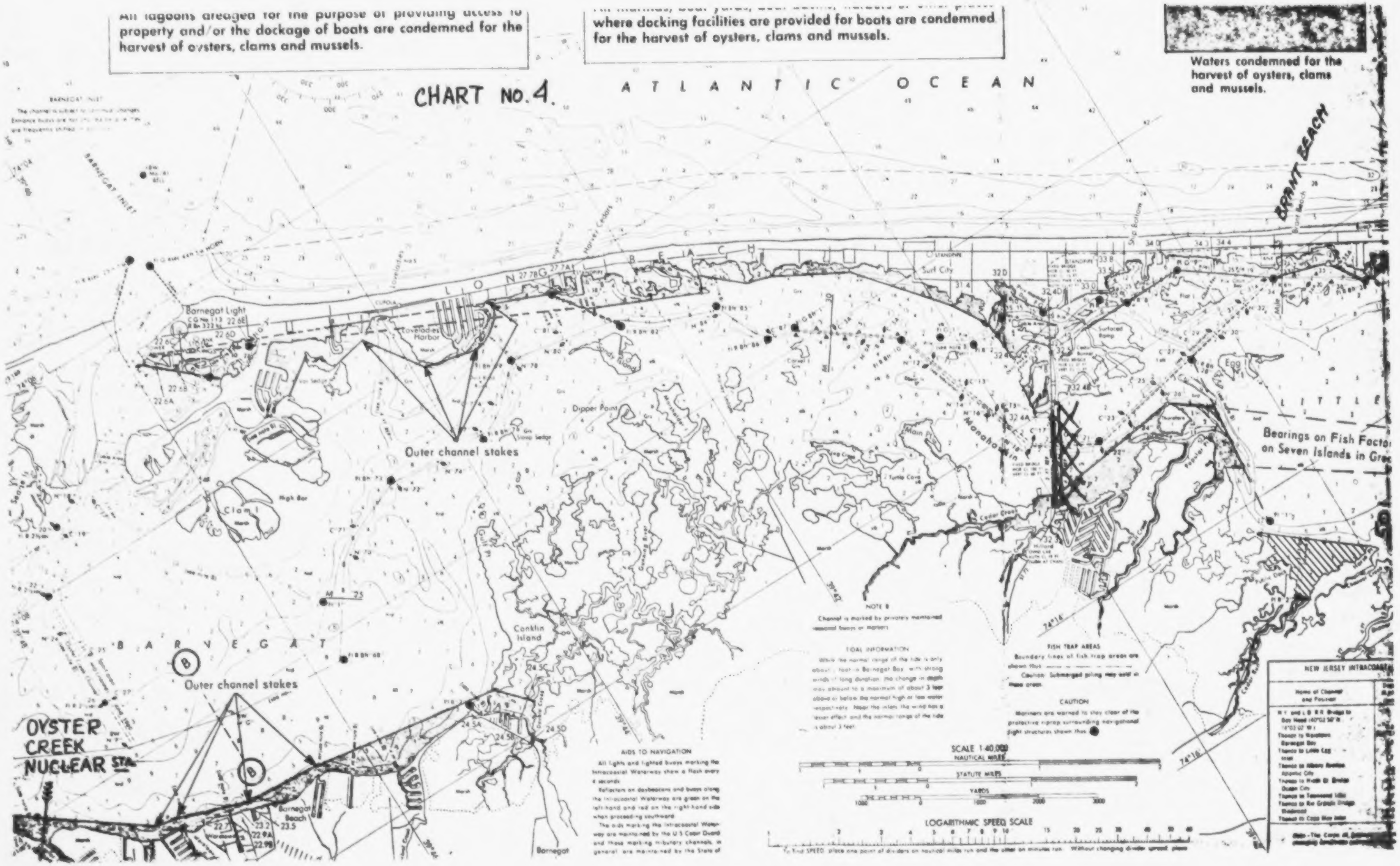

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Waters condemned for the harvest of oysters, clams and mussels.

NOTE B

Channel is marked by privately maintained seasonal buoys or markers.

TIDAL INFORMATION

While the normal range of the tide is only about 1 foot in Barnegat Bay, with strong winds of long duration the change in depth may amount to a maximum of about 3 feet above or below the normal high or low water respectively. Near the inlets the wind has a lesser effect and the normal range of the tide is about 3 feet.

FISH TRAP AREAS

Boundary lines of fish trap areas are shown thus

Caution: Submerged piling may exist in these areas.

CAUTION

Mariners are warned to stay clear of the protective riprap surrounding navigational light structures shown thus ●

AIDS TO NAVIGATION

All Lights and lighted buoys marking the Intracoastal Waterway show a flash every 4 seconds.

Reflectors on daybeacons and buoys along the Intracoastal Waterway are green on the left-hand and red on the right-hand side when proceeding southward.

The aids marking the Intracoastal Waterway are maintained by the U.S. Coast Guard and those marking tributary channels, in general, are maintained by the State of

To find SPEED, place one point of dividers on nautical miles run and the other on minutes run. Without changing divider spread, place

EXPLANATION

Charts of Condemned Shellfish Grounds, Barnegat Bay, Mantoloking (N.) to Brant Beach (S.). N.J. State Dept. of Health, October, 1966. Note in particular large number of intricate lagoon systems. Distance covered is approximately 27 statute miles. Note, also, that the only areas not touched by some form of disfigurement are in the vicinities of the Manahawkin Hunting and Fishing Grounds, located just to the left of the Manahawkin Bay Bridge (red line) and Island Beach State Park.

exists to the effect that the release of sewage, treated or otherwise, represents a direct hazard to personal health, despite the fact that causative organisms of such diseases as typhoid, cholera, bacillary and amoebic dysentery, various parasitic worms and "...very probably also some virus diseases including poliomyelitis." have been found in sewage.[3]

This opinion is based, obviously, on the assumption that the sewage effluent released into the estuarine environment has been treated in some manner. "Water contaminated by sewage...presents a definite risk of infection to bathers and those who drink it, and this risk is only reduced by ordinary biological treatment."[4] Chlorination of the effluent has not been an effective answer to this problem. Very minute concentrations of chlorine are lethal to many forms of marine life and there is also the fact that chlorine forms "very toxic compounds with some common constituents of city sewage." The approach to this problem has been the adaption of standards to which drinking water, public beaches and shellfish must conform.[5]

An idea of the difficulties involved in gauging the effects of polluted waters on the healthiness of public beaches may be formed from this paragraph from Moore:[6]

> "During the holiday season, the populations of certain towns may increase even five-fold, and this exaggerrates the inadequacy of their sea outfalls, especially when a day or two of heavy rain brings storm water overflows into operation and a part of the sewage bypasses its normal course to the sea. The epidemiologist who studies disease in these inflated summer populations cannot fail to realize at once that he is dealing with abnormal communities. Summer visitors to the seashore are exposed to the hazards of mass catering. They are engaged in activities that differ greatly from their ordinary home routine. They may be living in very crowded lodging houses. Add to this that a hygiene-minded public

> will ascribe almost any ailment to an obviously polluted bathing beach and it will be clear that some cautious assessment is required in dealing with the subject."

Moore's last statement, that the public will connect almost any illnesses contracted during their visit with the presence of pollutants in their bathing-area, has clear economic implications for any resort area which hopes to attract as many people to its beaches as possible. All of these factors point up the need for more research into the problems created by waste disposal in this environment.

III. To Be Free of Mosquitoes.

Prior to the wide-scale use of insect repellants after World War Two, New Jersey's ill-famed mosquitoes held sway over the entire Atlantic coast of the State. It was largely because of their presence that New Jersey's tidelands remained little more than a reserve for those who lived in the immediate area and for duck-hunters. A 1921 report of the New Jersey Agricultural Experiment Station noted pessimistically:

> "Along the 150 miles of seacoast from Keyport to Cape May, inclusive, there are 160,000 acres or more of possible home and hotel sites swept by ocean breezes and blessed with a delightful, clear, sunny climate, which encourages bathing, sailing, and other outdoor seaside activities. Only 3300 acres of this area shows any attempt at development and on a large part of this acreage nothing has been done except to lay out building lots." 7

Around the turn of the century the then-new public-health practices which had stopped yellow fever and malaria in Central America and Cuba began to arouse interest on the part of Stateside officials. If these dread diseases and their omnipresent mosquito vectors could be controlled by draining marshland and filling in swamps, then why not apply these methods to such marshlands in

Reproduced from best available copy.

the United States? In New Jersey the mosquito has been regarded almost from the first as more of a nuisance than a health-hazard. Nevertheless, this latter possibility has shown itself, most recently in 1959 with the small-scale outbreak of encephalitis which resulted in perhaps a dozen deaths and threw a scare into the entire region. But in the brave days around 1910 it was recognized that suppression of the mosquito would throw open vast areas of open land for development. It was a situation not unlike that of the Oklahoma Land Rush of the 1880's. T.J. Headlee mentioned above that 160,000 acres could be developed; according to his account there are (or were) 269,000 acres of marshland altogether. The basic argument he put forth was that in order to allow suburban development on 160,000 acres of coastland, the other 109,000 acres were to be drained of all standing water by means of ditching, diking, tide-gates and pumping. Accordingly, a vast program was at length gotten up along the entire coast for the "extermination" of the mosquito. Work gangs and extermination crews set to work to transform the marshlands, and this highly-coordinated effort is maintained today by the various county mosquito commissions which police the thousands upon thousands of linear feet of ditches which now crisscross the marshes from the Passaic area to Cape May, and who dig whatever ditches remain to be dug and who preside over the application of tons of oil and other pesticides to the marshes. It has been a fine program, highly successful, and one which has inspired imitation in many parts of the world; it may be said that the ditching-spade and the dredge have been the two most influential implements in the conversion of our tidelands into rank upon rank of pastel-colored boxes.

We offer now the observations of a specialist from New Zealand, V.J. Chapman:

> "While salt marshes have their uses or potential uses, they may also have disadvantages. The principal disadvantage is said to be their use as a breeding ground by mosquitoes...This is especially true of the salt marshes of New England, eastern Canada...and probably elsewhere. The menace in New England was regarded as so great that nearly all the marshes are now intersected by systems of artificial ditches, cut in order to make the marsh drain more rapidly after the flooding tides. Drainage of the marshes has also been undertaken near cities in order to enhance land values. The artificial ditches...have undoubtedly altered certain of the environmental factors, especially the water-table height and movement.
>
> "It has been found that, as a result of the environmental modifications, changes have also taken place in the vegetation cover. Spartina alternifolia var. glabra, which is an important food of snow geese, and which normally occupies extensive areas on the New England and Coastal Plain marshes, has been replaced by Pluchea camphorata, Iva frutescens var. oraria, and Baccharis halimifolia,(Shrubby groundsel-bush), all of which are worthless as food for wildlife. Pans, which originally contained good growths of widgeon-grass (Ruppia maritima), a principal duck-food, have become drained, and the Ruppia has disappeared as it cannot tolerate exposure to sun and air. As a result of such changes in the vegetation, drainage of these Atlantic American marshes has had a disastrous effect upon their wildlife usage.
>
> "Drainage ditches, and the consequent lowering of the water table, have also resulted in a decrease of the invertebrate population, especially of molluscs and crustaceans which feature largely in the diets of clapper-rails, greater yellowlegs, and other marine birds.
>
> "In the past, some of the natural marshes formed the home of extensive muskrat populations. But here again drainage, by bringing about changes in the vegetation, has destroyed the marshes as a muskrat habitat, and in Delaware trappers who formerly obtained around $200,000 annually from muskrat pelts have now been more or less forced out of business.
>
> "It would seem that many of the Atlantic American marshes need never have been drained, because no breeding of mosquitoes occurs in areas that are flooded 25 days in every lunar month. It has also been demonstrated that mosquito breeding can be controlled, without any detrimental effects on the vegetation and invertebrate organisms, by impounding the water and maintaining stability of the water level by pumping. Such systems, however, must be properly contructed, operated and maintained.

> If this type of sump drainage is allowed to pass into gravity drainage, the whole appearance and value of the marsh is destroyed. In one or two places open ditches have not been dug but instead subsurface "mole" ditches have been established. These do not interfere with the marsh vegetation, nor are there piles of sods along the edges, for colonization by Suaeda and Iva. This type of ditching is infinitely more preferable to more open ditching, and if at the same time some of the pans were impounded and stocked with fish, the marsh habitat for wildlife organisms would not be materially altered. It seems, therefore, that much unnecessary work has been carried out on the Atlanitc American marshes: the work of ditching has cost much money (ditching 44,500 acres of salt marsh in Delaware cost around $5 million) and at the same time has destroyed the value of the marshes." 8

Since Chapman's comments illustrate the fact that our knowledge of mosquito problems has advanced considerably since the time when the original ditching projects were begun, the blame cannot be placed upon these early public health men and mosquito-specialists. What is evident, however, is the failure of the agencies concerned to take advantage of this new knowledge. Needless to say, the adaption of marsh-impoundment methods would dispense with the old reliance on chemical pesticies as an ally of the ditch.

Some Suggestions

The problems which have been dealt with here are the most glaring of a host of difficulties which crowd the troubled issue of economics vs. environment. The situation is complicated by the fact that the estuarine environment as a whole is is subject to the greatest range of fluctuations of a host of factors in comparison to any other ecosystem on earth; this emphasizes the need for more research into all aspects of the tidal ecosystem and, consequently, the need for a comprehensive program of regional management.

I. A Regional Estuarine Management Agency

A possible prototype agency for the management of tidelands, which would give highest priority to the condition of the land itself--that is to say, an agency which would be staffed mostly by paid scientific personnel, such as ecologists, marine biologists, hydrographers, and so on--is here proposed.

Hazelton (1967) has detailed the functions of an existing agency, the New England Interstate Water Pollution Control Compact.

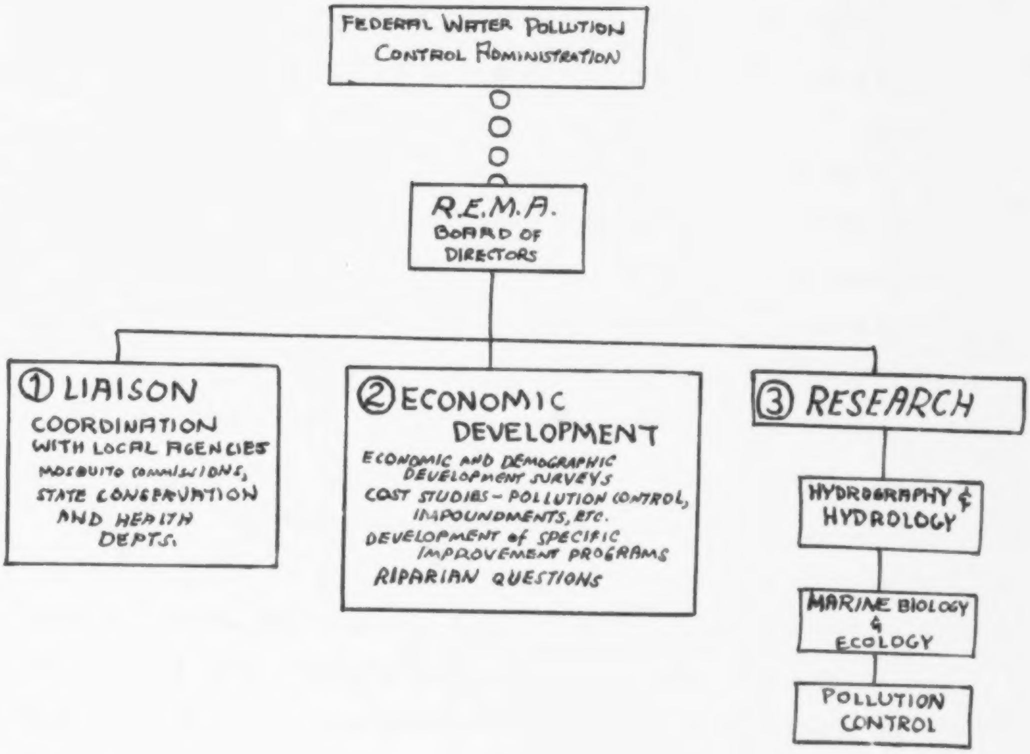
> "This regional authority classifies sections of rivers and streams according to a scale of potential water uses, balancing the cost of treatment and dumping restrictions against the benefits various kinds of water use bring to the community." 9

This kind of approach might be applied to the region under study--the coastal tidelands from New York Harbor to Cape May. But instead of classifying rivers and streams, our hypothetical agency--which could operate under the Federal Water Pollution Control Administration--would preside over the zoning of the coastal tidelands according to a scale similar to that above--of the various kinds of land and water use, recreational, industrial, and so on. It would operate according to the same overall guiding principle, that of weighing costs against benefits.

This group, which we will call the Regional Estuarine Management Agency (REMA), would consist of three main sections (See chart): Liaison, Economic Development, and Research. All three would be presided over by an administrative board, through which work would be coordinated and findings and recommendations submitted to its parent group, the Water Pollution Control Administration. The Liaison Section would maintain close contact with all state and local agencies concerned, such as county mosquito commissions, and the state conservation and health departments. Through this section REMA could work with the local authorities to determine the best course of action to take regarding the problem under study. The Economic Development section conducts all studies relating to human use of the tidelands exclusive of health and pollution problems. It could initiate studies of such things as the cost of pollution control, determination of tax value of land, a continuing check on the progress of regional economic and demographic development, a study of the involved question of riparian rights, feasibility studies for possible location of industries, development of recreational potentials and so forth.

The Research Section is the most important of the three, as its findings are used as the basis for action by the other two Sections. Three possible sub-sections would be:

1) Hyrography and Hydrology--Work on currents, erosion,


FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
R.E.M.A. BOARD OF DIRECTORS
① LIAISON
COORDINATION WITH LOCAL AGENCIES
MOSQUITO COMMISSIONS,
STATE CONSERVATION AND HEALTH DEPTS.
② ECONOMIC DEVELOPMENT
ECONOMIC AND DEMOGRAPHIC DEVELOPMENT SURVEYS
COST STUDIES – POLLUTION CONTROL, IMPOUNDMENTS, ETC.
DEVELOPMENT of SPECIFIC IMPROVEMENT PROGRAMS
RIPARIAN QUESTIONS
③ RESEARCH
HYDROGRAPHY & HYDROLOGY
MARINE BIOLOGY & ECOLOGY
POLLUTION CONTROL

– ORGANIZATION SCHEME –
REGIONAL ESTUARINE MANAGEMENT
AGENCY
[REMA]

and water-table studies.

2) Marine Biology and Ecology -- Studies of flora and fauna of tidelands and estuaries, number and distribution of species; fisheries research; biology of the marshes; determination of relationships between important species; classification of habitats; status of waterfowl and their food plants, and so on.

3) Pollution Control--research on sewerage systems and treatment; placement of outfalls; adaption of standards for effluent; periodic inspection of all treatment plants in conjunction with local Boards of Health; research on fate of effluents in marine environment, etc.

This wide spectrum of activities is founded on the conviction that the control of pollution must go hand-in-hand with the advancement of knowledge of its effects on the land.

Such an agency as REMA might also function in a more or less autonomous fashion, in which case the three main sections would be directly responsible to the board of directors, which could have the power to initiate its own programs and who could apply for Federal aid and research grants; REMA could recommend to higher Federal authorities various courses of action so that guidelines could be set for the further development of the region.*

As mentioned earlier, REMA's work would facilitate the categorization of zoned areas within the region according to an arbitrary scale of land and water use. The following classification scheme was suggested by one from Hazelton.[10]

---

* Federal and State-owned wildlife refuges and other such tracts of protected land would most probably be out of the jurisdiction of REMA.

Class A: Undeveloped marshland. Waters relatively free from pollutants.

Class B: Marsh accessible by road(s). Few houses, fishing-docks, etc.

Class C: Extensive residential development. Marsh dissected by many lagoons. Waters polluted. Shellfish harvesting unlawful.

The primary task of classification done, it will be necessary to ascertain how much of each type is present in the region, and to determine the status of each area according to its proximity to existing population centers, the assessed value of the land, and status of ownership. Once all these determinations have been made, an overall picture of the condition of the entire region is at last developed; through the work of the Research Section it can then be determined which areas should be allowed to continue development, or which others should be rehabilitated, and so forth.

II. A Remedy For the Mosquito Ditch.

It has already been noted that the use of shallow saline impoundments instead of mosquito ditches would alleviate the mosquito problem, and would do it better. Experimental projects utilizing these methods have revealed the feasibility of their use and have also shown that they can enhance the usefulness of the marsh as well; in areas which are set aside for wildlife use, the construction of impoundments tends to weed out undesirable vegetation and encourage the growth of desirable food plants.

One report [11] concluded, among other things, that "low-quality waterfowl habitat on coastal salt marsh areas could be substantially improved by flooding with salt water," and that " at the same time, the breeding og salt marsh mosquitoes could be controlled." Specifically:

1). Breeding of pestiferous salt marsh mosquito Aedes sollicitans could be completely eliminated from an area by constant flooding with salt water.

2). Waterfowl production was increased due to flooding. Clapper rails disappeared from the experimentally inundated areas, but numbers of ducks, geese, herons, terns, and others were greatly increased.

3) Hunting opportunity could be increased by the construction of low-level saline impoundments on low-quality salt marsh, and the resulting area harvest will also become greater.[12]

It is apparent from these results that marshland which has been damaged by ditching could be brought back to a high level of production using impoundments. It is suggested that these methods are utilized to the fullest in areas already under Federal and State protection, so that their present usefulness may be enhanced, as well as in areas which are to be rehabilitated.

****

SUMMARY.

Some of the more obvious uses of our coastal marshlands and estuaries have been detailed.

Several cases of poor utilization of these areas are analyzed.

A Regional Estuarine Management Agency has been proposed, as a hypothetical scheme for overseeing future disposition of the entire region.

The method of shallow saline impoundments, already shown to be feasible, is here advocated for the enhancement of present usefulness of protected areas, and for areas which are to be rehabilitated.

It is again emphasized that pollution control can only be successfully pursued when its effects on the ecosystem are fully understood--which, in turn, demands a comprehensive plan of regional management. It is believed that with such measures as those proposed in this report, the future security and usefulness of the region in question will be assured.

******

Notes

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LARCHMONT MAMARONECK NATURE COUNCIL
8 STAFFORD PLACE **LARCHMONT, NEW YORK**

PHILIP W. WOOD, CHAIRMAN

July 25, 1968

Mr. John S. Farlow
Regional Coordinator
National Estuarine Pollution Study
North Atlantic Water Quality Management Center
Edison, New Jersey 08817

Dear Mr. Farlow:

The Larchmont Mamaroneck Nature Council prepared for the July 23, 1968 public meeting on estuarine pollution by asking the residents of the Larchmont and Mamaroneck area the quality of water they desire for Long Island Sound. The meeting was publicized, and the public was asked to express an opinion about the water quality. A copy of the article, as it appeared in the Mamaroneck Daily Times, page one, July 10, 1968 is attached.

Eighteen people took the trouble to write to the Larchmont Mamaroneck Nature Council and approximately forty additional people telephoned or otherwise verbally communicated. All expressed the desire for the cleanest water possible, and only one expressed the desire with a statement of limitation on tax increases potentially required. While the response was small compared to the circulation of the paper, it was not small considering the fact that it was necessary to take pen in hand and go to the mailbox. Also, we believe this is a significant expression, since it was unanimous.

Larchmont and Mamaroneck are primarily residential and Long Island Sound is used for swimming and boating primarily. Therefore, the vote for water suitable for shell fishing was an expression of water quality desired, not necessarily the intended use.

This report is one of individuals, not scientists or professionals. I believe your organization should be interested in such an expression of the people.

Very truly yours,

Philip W Wood

Philip W. Wood

MAMARONECK, N. Y., WEDNESDAY, JULY 10, 1968

On Quality Of Salt Water

OPTION OF RESIDENTS SOLICITED IN SURVEY

The Larchmont - Mamaroneck Nature Council chairman, Philip W. Wood, plans to attend a public hearing of the Federal Water Pollution Control Administration on July 23 and seeks to report the wishes of the community.

The meeting, at the Rockefeller University in New York City, will deal with pollution of estuaries in the vicinity of New York City. Of interest to residents of Mamaroneck and Larchmont, Mr. Wood points out, is that Long Island Sound is considered an estuary.

The study considers an estuary "a semi - enclosed coastal body of water having free connection with the open sea and dilution of sea water by land drainage." This definition, Mr. Wood observes, includes all such tidal areas as Mamaroneck Harbor, Larchmont Harbor, Premium Mill Pond and the local salt marshes.

The objective of the National Estuarine Pollution Study, he reports, is to document and analyze various aspects of pollution; to make recommendations for a comprehensive national program for the preservation, study, use and development of the estuarine zones, and to recognize the respective roles of federal, state and local governments plus public and private interests.

Before attending the hearing, Mr. Wood seeks to determine which level of quality of salt water the community desires. The three levels are "suitable for shell fishing," best; "suitable for swimming," second, and "suitable for some industry," last.

OPTION

(Continued from Page 1)

"We have number two quality," Mr. Wood says, "suitable for swimming. At some undefined cost we could have water suitable for shell fishing and if all efforts for pollution control fail we can have number three."

He asks residents to vote by checking one of the following:

I prefer water suitable for shell fishing . . .

I prefer water suitable for swimming . . .

I don't care but want the lowest possible taxes . . .

Send ballots to him at the Larchmont - Mamaroneck Nature Council, 8 Stafford Place, Larchmont, N.Y. 10538.

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APPENDICES

List of Participants at New York City Public Meeting, July 23, 1968. . .517

List of Other Attendees at New York City Public Meeting, July 23, 1968 .520

Name	Address
Speakers	
Alexander Aldrich	Exec. Dir., N.Y. State Hudson River Valley Comm., 105 White Plains Rd., Tarrytown, N.Y.
Michael C. Antonelli	Treas., Ulster Co. Citizens for Clean Air, Box 178 Mt. View Ave., Rosedale, N.Y.
Mrs. Wilfred Armitage	Water Resources Ch., League of Women Voters, 733 Bay Ave., Brick Twp., N.J.
Dr. Donald B. Aulenbach	Chairman, Env. Eng., Rensselaer Polytechnic Inst., Troy, N.Y.
Fred Baker Jr.	Chairman of Boat Club, Smith Creek Boat Assoc., 1405 Redwood Dr.
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Merril Eisenbud	Admin., Env. Protection Admin., City of New York, Municipal Bldg., New York City, N.Y.
Jeff Endervelt	Legislative Assistant - Congressman John M. Murphy, 112 Crystal Ave., S.I., N.Y.
Jean Faust	Research Assistant - Congressman William F. Ryan, 417 Riverside Dr., Apt. 2E, New York, N.Y.
Dr. Charles D. Gates	Professor, Cornell University, Hollister Hall, Ithaca, N.Y.
Roger Gilman	Dir. of Planning and Development, Port of New York Auth., 111 8th Ave., New York, N.Y.
Dr. Kenneth Gold	Research Ecologist, Osborn Labs of Marine Sciences, N.Y. Aquarium, Boardwalk at W. 8th St., Brooklyn, N.Y.
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Mrs. Herbert Wong	League of Women Voters of Pelham, 210 Blvd., Pelham, N.Y. 10803

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